

DEVELOPING THE RESILIENCE SCALE  
FOR COLLEGE STUDENTS-RSCS

by

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## ABSTRACT

College students face numerous stressors that have the potential to impair their ability to sustain effort towards their academic goals. Determining the external and internal factors that contribute to the academic persistence of undergraduate college students is imperative. Resilience, the ability to bounce back after significant challenges, setbacks, or adversity, may be an important factor in academic success. The study of resilience spans decades (Masten, 2001); however, not many studies have focused on determining the factors that make up resilience in undergraduate college students. Instruments have been developed to measure resilience, but there is not one that is widely accepted to assess resilience in undergraduate college students. A pilot study was conducted to inform the current study. This study seeks to develop a psychometrically sound instrument for measuring resilience in undergraduate college students.

*Keywords:* academic persistence, resilience, academic stress, undergraduate

## DEDICATION

This dissertation is dedicated in loving memory of my amazing sister, Melakikki Shonte' Edwards, who was always there to make me laugh, wipe tears, and cheer me on. I can still feel your presence every day. To my mother, Shirley Shannon Edwards and my father, Maurice Jerome Edwards who taught me to shoot for the stars, that my race and gender are not limits, to be true to myself, and that life is a marathon, not a sprint. To my brother, Jarvis Maurice Edwards, for his unyielding loyalty, love, and respect. Finally, to my soulmate, Kaene' Quagei Turner for believing in my dreams.

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## Chapter One

### Academic Stress

Galatzer-Ivey, Burton, and Bonanno (2012) pose the question: What is it like to leave home and attend college? The authors explain there is a romanticized version of college life akin to a fantasy world without stress and a nightmarish version where students become consumed with turmoil. The current picture of college life falls somewhere in the middle. Recent literature highlights the stressful nature of earning a college degree; drawing attention to the increasing prevalence of numerous stressors to include: increased academic expectations and pressure, relationship difficulties, adapting to a new environment, losing previous support systems, establishing new peer relationships, new personal responsibilities, safety issues, and the incidence of traumatic event (Allan, McKenna, & Dominey, 2014; Galatzer-Ivey et al., 2012; Hartley, 2011; Li & Nishikawa, 2012).

Huang and Lin (2013) report numerous and varied stressful situations involving managing one's time, juggling course requirements, interactions with faculty, and other personal goals characterize college life. Academic stress can negatively impact students physically, emotionally, and mentally. Wilks and Spivey (2010) identify the greatest source of academic stress as examination preparation, academic competitiveness, intimate relationships, and the incongruence between the perception of college life and the reality. More, large universities expose students to unique stressors (Hartley, 2011). Individually, these students typically struggle with minimal academic support from professors in comparison to high school, increased social isolation due to the size of the school, and increased financial debt. The ability to eliminate stress for undergraduate college students is an insurmountable task; examining how academic stress impacts students and what factors mediate academic stress may be more beneficial.

Increased stress can trigger various adverse outcomes in college students such as disturbed sleep patterns, depression, and anxiety (Hartley, 2011; Klibert, Lamis, Collens, Smalley, & Warren, 2014; Megivern, Pellerito, & Mowbray, 2003). Research has consistently supported the negative impact of stress on academic performance triggering sleep disturbance, physical symptoms, anxiety, and depression (Hartley, 2012). According to Li and Nishikawa (2012) college students are at increased risk for significant emotional distress as a result of poor or inadequate coping skills. In fact, according to these authors college students are experiencing depression at higher rates than the general population. More importantly, college counselors require empirically based interventions to meet the needs of the increasing number of students seeking help for emotional problems (Hartley, 2012). In fact, those students experiencing psychological problems are at increased risk of abandoning their academic goals.

The National Center for Education Statistics reports about 60% of first time, full time students at four year institutions in the fall of 2011 graduated in the fall of 2017. Further, the overall graduation rate for females in that cohort was higher at 63% than males at 57%. The National Student Clearinghouse Research Center reports over 2.3 million people entered postsecondary education for the first time in the fall 2013, increasing 1.8% from the previous cohort, six years later 59.7% or 1.4 million students completed. The data in this report include all first time students who entered 4 year or 2 year institutions who were able to graduate six years later. It also includes transfers not necessarily graduating from the same institution that where education began. The National Student Clearinghouse Research Center reports about 58% of first time, full time students at four year institutions graduated in 6 years in the fall of 2011. Graduation rates vary depending upon the type of institution public versus private. The numbers are more revealing based upon race. Specifically, Asian students at a rate of 70%, Caucasian



students at a rate of 67%, Hispanic students at a rate of 49.5%, African American's graduated at a rate of 41% in the fall of 2012.

Tinto's theory of student departure theorizes that students come to college with specific characteristics reflective of his or her background, once at college these students must navigate peer and faculty interactions using these personal resources. More, academic persistence is a complex interaction between a student's motivation (attending class, doing the work) and a sense of belonging within the university community (Tinto, 1975). The ability to persist is an integration between the student's ability to adapt academically and socially. We can extend Tinto's work by examining if the traits associated with undergraduate resilience can illuminate the variance in academic persistence and academic success.

### **Statement of the Problem**

Given the number of students who enter higher education with such promise but are unable to persist beyond significant challenges; clinicians, educators, and administrators would benefit from clarity regarding what factors are influencing those students who can sustain effort despite challenges unique to the college experience. Frederick Hess (2018) has drawn attention to what he deems the "college drop- out problem."

In recent years academic, financial, and relationship difficulties may be contributing factors in decreasing college student's ability to successfully matriculate. More, the pressures of college life might be more pronounced in full time students who are just beginning their studies (Cooke, Bewick, & Barkham, 2006). In his 2018 article for Forbes magazine Mr. Hess poses the question: "How often do incoming, full time college students matriculating at four- year institutions begin a degree program and do not finish?" According to Mr. Hess only about 48% of incoming freshman at four-year institutions had not yet completed a degree program in six

years in 2016. The four year graduation rate is 28% for the same time frame for four year institutions. In essence, nearly two million will begin college and drop out before earning a degree (Hess, 2018). The National Center for Education Statistics reports only about 39% of first time, full time, degree seeking students at four-year institutions actually graduated in four years between 2006 and 2009. The numbers do not improve greatly for the 2010 through 2014- time span at 40%. It should be noted these numbers are for a four year trajectory when the standard is to report six year graduation rates. When examining the six year graduation rates the picture does improve but not without room for improvement. The college graduation rates represent lost time, effort, money, and a dim picture for future earnings for these students. University administrators, faculty, and staff can benefit from a deeper understanding of what promotes healthy, functional students.

There is a growing body of work encouraging colleges and universities to focus their retention efforts on addressing psychological factors that might be contributing to poor academic outcomes. Increasing focus on decreasing student departure numbers have increased the interest in understanding the psychological well-being of University students as they transition to college life and throughout their college careers (Cooke, et. al., 2006). At present there are few studies that have examined resilience as students are entering college with the purpose of linking it to academic success (Allan, et. a., 2014). Understanding the intricacies of resilience among undergraduate college students may assist in distinguishing those who are headed for academic achievement and those who are not (Allan, et. al., 2014). More research is required to understand the viability of a resilience framework in determining if the relationship between resilience and academic persistence is crucial for some students as they are learning to navigate the social and emotional demands of college (Hartley, 2011). Further, understanding the complexities of the

construct resilience, specific to undergraduates, may assist those who are interested in helping those students to be academically successful in college (Allan et al., 2014). Specifically, poor transition to college has been noted by first year students who did not complete as a contributing factor to leaving school (Yorke, 2000). In essence, more focused studies on the use of resilience as a framework to facilitate transition and first year adjustment could be helpful to those who are responsible for creating these programs (Allan, et.al., 2014).

Resilience may be essential in facilitating successful transition and adjustment to the demands of college life; because resilience supports the development or enrichment of skills and resources internally (self-efficacy) and externally (friendships), both are factors in encouraging successful matriculation (Allan et al., 2014). Despite the increased pressure and significant changes undergraduate students are faced with many are able to sustain effort and achieve academic success. This illustrates the importance of creating an environment that facilitates the ability to adapt and thrive (Jimerson, Egeland, & Teo, 1999). A student's ability to function under such difficult circumstances may indicate the presence of increased levels of resilience. This does not mean that there is an absence of emotional distress or an immunity from stress instead it indicates the capability to function despite increased pressures. Resilience supports the development of assets and resources within and surrounding the individual which in turn encourages positive outcomes. In college resiliency would mean achieving positive academic outcomes while managing significant setbacks, barriers, and challenges that in others would result in a declining performance (Allan, et.al., 2014).

The demands of higher education are distinctive and significant; therefore, the need for more research on the practicality of resilience as it relates to the health of college students and the persistence towards academic goals must be a priority. Additionally, more studies are

required to examine the impact of interventions designed to improve resiliency on academic outcomes in undergraduate college students. To summarize the problem, pursuing a college degree to completion includes persisting through unique, significant stressors; colleges and universities are encouraged to focus their efforts on exploring psychological factors to improve retention and graduation rates yet there are limited studies being conducted to facilitate this endeavor; resilience studies may be able to explain why some students are experiencing academic stress but are able to demonstrate positive outcomes and others are not; nonetheless the literature does not reflect a focus on research examining resilience, academic persistence, and academic success.

### **Statement of Purpose**

There are limited studies of resilience, as a construct, in higher education and as such a limited understanding of the construct as a relevant concept in encouraging positive academic outcomes for undergraduate college students (Allan, et.al., 2014). A growing body of research has encouraged institutions of higher education to focus on understanding student frustrations, offer the necessary supports, and develop interventions to assist students during difficult times in order to improve student outcomes (Hess, 2018). In addition, findings have suggested that those institutions who consider the unique psychological factors of individual students can expect more positive outcomes (Destin, 2018). Specifically, psychological factors have been found to have a powerful impact on college student success and completion (Schneider & Clark, 2018). Psychological factors can be thought of as student perceptions of his or her experiences in the classroom and the academic community at large. The college environment can convey messages to students through administrative policies and practices. More importantly, these messages can have a powerful impact on student outcomes (Destin, 2018).

Some research has focused on the motives and the mindset of individual college students. Motives can be conceptualized as thoughts about what matters to a student and who the student can visualize becoming in life (Destin, 2018). If a student can communicate what he or she is working towards and why it is important to them it increases motivation and persistence towards academic goals (Browman & Destin, 2016). Remarkably, college environments can facilitate or encourage as well as discourage students from established goals and values (Destin, 2018). The current study conceptualizes resilience among college students as a combination of internal and external factors which includes motives and mindset.

The purpose of this study is to develop a psychometrically sound instrument to assess resilience among undergraduate college students. This instrument would assist institutions of higher learning in promoting, facilitating, and encouraging the academic success of undergraduate college students. Having a reliable and valid instrument to measure resilience in undergraduate colleges students would support the assessment of psychological factors in an effort to improve retention rates. Additionally, the purpose of this study is to add to the body of literature focusing on resilience, academic persistence, and positive academic outcomes.

Incoming freshman can be administered such an instrument during freshman orientation in a manner similar to a placement test. Those students who have lower resilience levels would enroll in courses that improve resiliency. For example, if Brian has a resilience score of 80 demonstrating deficits in self-efficacy and mindset. Brian's academic advisor could place him in a course or workshop with a curriculum designed to improve these deficits. In the same way freshman students who exhibit deficits in math are placed in remedial math courses to improve the likelihood of successful completion of math requirements. The academic advisor could track Brian's progress using the instrument during regular sessions. More importantly, the ability to see

tangible improvements in resiliency and academic goals may be reinforcing for the student. This instrument would be just one tool utilized by the academic advisor to encourage positive academic outcomes. In other words, we increase the likelihood of Brian successfully matriculating through college if we know he has these deficits at the beginning of his college career and respond accordingly.

A valid scale that measures resilience levels in undergraduate college students may be just one of the many tools colleges and universities employ to retain and encourage successful completion of academic goals among undergraduate students.

### **Significance of Study**

Resilience as a research concept originated from the need to explain why some people can adapt under stress and others cannot (Hartley, 2011). Specifically, resilience research attempts to identify and understand the differences between those who face adversity and adapt and those who do not (Masten, 2001). Kwek, Bui, Rynne, and So (2013) report that the increase in resilience research began in the last three decades. Early in resilience research, the literature focused on identifying risk factors, but later the field shifted focus to a strengths-based approach to ameliorate the effects of emotional problems. In particular, the focus became identifying those who have demonstrated success despite adversity and attempting to learn from them (Fletcher & Sarkar, 2013). The search for the exact factors that diminish the negative impact of stress is the essence of the first pursuit of the definition of resilience (Fletcher & Sarkar, 2013). The study of resilience has been the focal point of various disciplines including psychology, health-related fields, child development, and education.

The beginning of resilience research focused on identifying what specific characteristics of an individual support resilience (Masten, 2001; Masten, 2007). Later, Ruter (1987) and

Werner and Smith (1982) began to reflect a broadening to include external features such as familial characteristics, social environment, school, and community characteristics that promote resilience. Notably, substantial focus on resilience in terms of broader life events such as poverty, loss, parental factors i.e. divorce, neighborhood, and community factors i.e. community violence, and school deficits began to be of interest (Luthar, 2006; Luthar & Cicchetti, 2000; Masten, 2001; Masten & Tellegen, 2012).

Parental competence, parenting quality, positive relationships with adults outside the home, cognitive and self-regulation skills, positive view of self, self-efficacy, intrinsic motivation, personal competence, self-care, and social connectedness have all been associated with promoting resilience (Leary & DeRosier, 2012; Masten, 2001; Masten, Best, & Garnezy, 1990). To illustrate, parents and caregivers foster protective psychological processes, provide information, access to resources, nurture mastery motivation, and learning opportunities. Schools and churches provide role models and mentors, nurturing adults, support and reinforce the development of skills that improve problem-solving (Masten et al., 1990). Not to mention, schools provide opportunities to build social competence, academic competence, self-efficacy, and self-esteem (Toland & Carrigan, 2011). Global factors such as the ones mentioned protect the course of development and promote resilience. Positive factors have been shown to have a cumulative effect on an individual. To explain, as the number of positive factors increases the likelihood of adaption and resilience also increases (Luthar, 2006). Equally crucial for those exhibiting higher levels of resilience, is the ability to access resources and make sound choices during critical times (Masten et al., 1990).

A paucity of research exists regarding the relationship between resilience and academic processes. Thus far educational reform efforts have centered on increasing the thoroughness in

curricula and instruction but if psychological factors are not addressed those efforts may not be as effective (Aronson, Fried, & Good, 2002). Specifically, little is known about the strength of the effects of various factors that promote positive adaptation in the face of student stress (Leary & DeRosier, 2012). Previous research focused almost exclusively on ethnic-minority groups and severe academic underachievers (Martin & Marsh, 2006). While these findings are valuable, resilience and academic outcomes relate to all students considering at some point every student will face some level of difficulty or challenge; therefore, limiting the scope of resilience research to outliers is less impactful (Martin & Marsh, 2006). If educators and clinicians are more knowledgeable about the processes that encourage resilience they can better support improved academic outcomes (Clauss-Ehlers & Wibrowski, 2007). Students who can sustain increased levels of achievement, motivation, and performance, in spite of experiencing stressful events and other setbacks that might put them at risk for doing poorly or dropping out are describe as resilient (Alva, 1991). We can learn from those students who are able to manage the stressful nature of earning a college degree, managing new academic challenges, and navigating complex social interactions to persist towards successful attainment of their goals (Martin & March, 2006). The findings of resilience studies would have significant implications for the development of programs to promote adjustment, academic success, and retention (Leary & DeRosier, 2012).

The lack of resilience studies with undergraduate college students where the focus is understanding how resiliency might impact academic persistence and academic success creates an identified need. The current study addresses this gap in the literature by developing a psychometrically sound instrument to measure individual levels of resilience among undergraduate college students. Specifically, this study will develop an instrument using factors



that are said to contribute to resilience among undergraduate college students. More, this study will advance a definition of undergraduate resilience that can be used to develop programming to transition students to college life as well as improve their ability to sustain effort once enrolled.

The findings from this study will have compelling implications for clinicians, educators, and college administrators in creating interventions and programming to facilitate successful transition and adjustment to college life. Many factors that influence academic performance may be difficult to control but resilience could be different (Allan, et. al., 2014). For example, the development of an instrument to assess resilience in undergraduates might be used to assess resiliency at freshman orientation. The results would in turn be used in academic advising to facilitate a student's successful matriculation. More, the scale could be utilized by college counselors in developing treatment interventions to meet the needs of students who are struggling to persist and manage the demands of college life and pursuing a college degree.

## Chapter Two

The science of resilience emerged from research on children at risk for mental health problems in the quest to understand the etiologies of disorder (Masten et al., 1990; Masten, 2007). Resilience research rose with developmental psychopathology and was primarily shaped by the pioneering insights and collaborations of psychologists and psychiatrists who sought to understand, prevent, and treat mental health problems (Masten, 2007). These scientists argued the importance of examining children who exhibited positive developmental markers despite adversity and severe risk as a means to develop theories, guide interventions, and inform policies (Masten, 2001). Two decades of resilience research resulted in the development of various models, research methods, extensive data, media exposure, criticisms, and controversies (Luther, Cicchetti, & Becker, 2000; Luthar, 2006; Masten et al., 1990; Masten, 2001; Masten, 2007).

Norman Garmezy's pioneering work with the children of people with schizophrenia has been called the beginning of resilience research (Luthar, 2006). Garmezy (1974) found a subset of children in his study who demonstrated adaptive patterns despite the increased risk. His study was a departure from the typical symptom-based models of the time and instead focused on the identification of positive outcomes (Luthar, 2006). E. James Anthony's (1974) groundbreaking study labeled the children who appeared to resist the psychopathology of their parents "invulnerable." Later, researchers would learn that identifying these children as somehow remarkable or invincible was misleading because resilience happens to be a common phenomenon centering around the operation of basic human adaptational systems (Masten, 2001).

Emmy Werner's (1982) seminal longitudinal study with children and families on the

Kauai Island of Hawaii identified significant protective factors that aided in decreasing the impact of poverty, unstable home environments, and inconsistent parenting. Michael Rutter's (1987) seminal work identified major conceptual issues for the study of resilience and interactive protective processes by gender. His work was one of the first to express the importance of clarifying how the processes of resilience diminish risk effects (Luthar, 2006). Furthermore, Rutter (1979) identified a group within his study that demonstrated factors that supported resilience to include competence, creativity, and effectiveness. In summary, the pioneering scientists of resilience research realized something noteworthy was occurring: children who should be exhibiting maladaptive patterns were somehow coping, thriving, and excelling. Thus, the question became: how do we account for these findings?

### **Resilience Defined**

Resilience is a term commonly reflected in pop culture and often used in regular conversations among lay people with varying meanings. As noted by January (2016) it has become common inside and outside of academia. What does it mean when a social worker or counselor describes a family as resilient? An educator who praises the resilience of one of her students? Is it the same meaning the United States Army meant when pushing for programs to improve soldier resilience? How does resilience differ from the similar constructs of GRIT, hardiness, and mental toughness? The following section will explore the definition of resilience as a stand-alone construct.

Throughout the last several decades of resilience research, the construct has been defined and studied in many ways. For example, resilience is a "dynamic process encompassing positive adaptation within the context of significant adversity" (Luthar et al., 2000, p. 543). Masten and colleagues (1990) defined resilience as "the process of, capacity for, or outcome of successful

adaption despite challenging or threatening circumstances" (p. 426). Moreover, "good outcomes in spite of serious threats to adaptation or development" (Masten, 2001, p. 228). Also, as a multi-faceted personality characteristic that affords a person the ability to endure, persist, and successfully adapt in the face of adversity, traumatic events, & stress (Ahern, Kiehl, Sole, & Byers, 2006; Conner & Davidson, 2003; Huang & Lin, 2013; Masten & Tellegen, 2012). Still, others offer resilience is not a personality trait or characteristic nor is it to be thought of as a concept of the individual (Luthar et al., 2000; Masten, 2007; Toland & Carrigan, 2011).

Resilience is as an outcome of ever-changing processes, not the elimination of risk or stress but the ability to manage it (Masten, 2001; Toland & Carrigan, 2011). More importantly, resilience does not cause an individual to thrive in the face of adversity. Rather, resilience reflects the developmental processes by which an individual acquires the ability to use internal and external resources to adapt despite adversity (Leary & DeRosier, 2012). Generally speaking, resilience can be thought of as an intricate relationship, between an individual and his or her environment, in which an individual can accomplish positive outcomes by using both internal and external protective factors despite exposure to significant obstacles.

In essence, the construct is two-dimensional with the implication of exposure to adversity and demonstration of positive adjustment outcomes despite said exposure (Luthar & Cicchetti, 2000). For college students the exposure to significant academic stressors while pursuing a college degree defines adversity. The ability to overcome one challenge and see positive outcomes, then another, and another would encourage resilience in that student. Equally important, resilience is a fluid concept, not a fixed one. Additionally, demonstrated adaptability despite adversity is not permanent. Consider it a developmental progression with new emerging strengths and vulnerabilities as life goes on (Werner & Smith, 1982). Resilience is not

generalized across domains. In other words, just because a person demonstrates resilience in one domain, he or she may not demonstrate resilience in another (Luthar, 2006). Resilience is the ongoing process of being able to utilize resources that aid in dealing with current challenges adaptively and provides a foundation for coping with future difficulties (Leary & DeRosier, 2012).

In sum, resilience is a multi-dimensional, complex construct defined, conceptualized, and studied across various disciplines to include psychology, pediatrics, child development, education, and health-related fields (Huang & Lin, 2013; Kwek et al., 2013; Miller & Daniel, 2007). Think of the constructs GRIT, hardiness, and mental toughness as aspects of the construct resilience.

**Grit, hardiness, and mental toughness.** GRIT can be thought of as perseverance and passion for long term goals, working zealously towards challenges, maintaining effort and interest over an extended amount of time despite failure, disappointment, or boredom and conceptualizing achievement as a marathon (Duckworth, Peterson, Matthews, & Kelly, 2007). GRIT focuses on how a person might sustain effort towards the accomplishment of long-term goals but not necessarily how an individual might have the ability to do so. In other words, the focus is on the outcomes and not necessarily the process. Resilience research focuses on both the process and the outcomes.

Hardiness is conceptualized by Kobasa (1979) as three personality traits or characteristics: challenge, commitment, and control. Specifically, individuals who are said to be hardy embody a sense of purpose in life, approach stressful life events with action and perceive adverse events to be within their control. More, hardiness affords an individual the ability to cope with stressful life events through active coping skills (Mosely and Laborde, 2015). Kobasa's

(1979) seminal work in the field of health focused on individuals who resisted illness despite being exposed to significant stress. Similarly, mental toughness, a construct often studied in sports psychology, is conceptualized as challenge, commitment, control, and confidence. These four traits are said to mediate the negative impact of stress thereby allowing the individual to perform consistently (Clough, Earle, & Sewell, 2002). Mental toughness and hardiness are thought to be the same by some (Clough et al., 2002). Hardiness and mental toughness are more expansive in that they both consider how an individual might have the ability to cope with stressful life events; however, neither considers the developmental aspects of these processes, i.e., how might a sense of purpose develop? Resilience research considers the impact and the possible influence of parents, mentors, and so forth.

All three of these constructs include overlap with one another. Distinctively, in underlying traits, the appraisal of adverse life events as manageable, and the adoption of positive coping skills forming a pathway towards resilience. All three constructs include components that make up the conceptualization of resilience. The hardiness research is the basis of the resilience definition used by Conner and Davidson (2003) but more on that later. Neither of the three are equal to the resilience framework outlined in this paper: the interaction of a person's ability to draw on internal (i.e., personal control) and external influences (i.e., accessing resources) to overcome significant challenges or stumbling blocks to be successful.

Resilience is our ability to bounce back after we have experienced adversity. It is what we do in order to get back on track. Resilience is the combination of the decisions we make, the resources we access both internally and externally, to ensure we reach our desire outcomes. Unlike grit which only focuses on the effort we use to persist towards a specific goal. Specifically, grit, as a construct, does not address what happens when all of our efforts to meet

the goals we have set for ourselves do not pan out. Resilience is comprehensive construct considering what developmental processes, global factors, and internal resources have contributed to our ability to get back up. Hardiness, grit, and mental toughness can all be conceptualized as being a part of the construct of resilience. Specifically, all three constructs can be described as internal resources that a person might draw on in an effort to embrace challenges and persist towards goal attainment. In other words, resilience, as a stand-alone construct, provides a complete framework by which we can explore the variance in undergraduate academic success. Drawing on the extensive literature on resilience and the numerous definitions advanced, the current study defines resilience among undergraduate college students as a complex, dynamic interaction between a student's ability to access internal and external resources and make good decisions to persist towards positive academic outcomes.

### **Theoretical Models**

Those examining resilience in the literature have developed models to explain the construct and its factors. Bronfenbrenner's (1979) bio-ecological systems model of development has been used to facilitate the understanding of the complex structures and interactions that inform human development across time and context (Toland & Carrigan, 2011). This model conceptualizes the child as being within various interrelated micro-systems and macro-systems. The child's maturing biology interacts with aspects of each system to guide development. Further, within each level of the system, there can be difficulties or risk factors as well as protective factors (Toland & Carrigan, 2011). The compensatory model used a similar approach focusing on risk factors and protective factors.

The compensatory model (Masten, 2001) theorizes risk factors and protective factors combine additively and with the onset of adversities personal attributes and support from the

environment can be engaged to counteract them. In other words, resilience is the outcome of the interaction between the balance of protective and risk factors of the individual and the balance of the protective and risk factors of the environment (Toland & Carrigan, 2011). Both models have been used to guide resilience research. Some have used variable focused approaches, and others have used person focused approaches (Masten, 2001). Variable focused approaches use statistical methods to find links between the qualities of the individual and the qualities of the environment and the resulting outcomes. Person-focused approaches compare different groups of people at a single point in time and across time-based upon a set of criteria with the goal of differentiating resilient individuals.

Conner and Davidson (2003) developed a five-factor model based upon an exhaustive literature reviews. The five-factor model included personal competence, high standards, tenacity, trust in his or her instincts, tolerance, acceptance of chance and secure relationships, control, and spirituality. The authors drew explicitly from the hardiness research model. Richardson (2002) created a theoretical model of resilience that asks the following questions: are we born with it? What is the process? What are the qualities that determine its predictive power? In summary, various definitions have been advanced or explored in the literature, but the key is determining which specific factors define or explain resilience expressly for undergraduate college students when faced with the unique challenges of pursuing higher education. The following sections will explore the model guiding this study.

**Motivational model of achievement.** Resilience can be defined as “any behavioral, attributional, or emotional response to an academic or social challenge that is positive and beneficial, i.e., increasing effort, adjusting strategies (Yeager & Dweck, 2012). When a student struggles with an academic task what determines whether he or she will give up or embrace the



challenge and persist to overcome it (Yeager & Dweck, 2012)? What are the psychological components that enable some students to thrive during challenges, while others with equal abilities do not (Blackwell et al., 2007)? In other words, how do we foster resilience in the student with the “I cannot” perception? In recent years a motivational model that has garnered attention suggests a student's core beliefs or mindset can foster different response patterns when faced with challenges and setbacks and in turn determine whether resilience is fostered (Blackwell et al., 2007).

In this model, an individual may believe different theories about the nature of intelligence (Dweck & Leggett, 1988). Implicit theories promote specific judgments and reactions which can initiate consistent patterns of vulnerability or resilience. Further, implicit theories trigger different motivational concerns which in turn provides the framework for interpreting achievement outcomes. Research suggests that implicit theories create a meaning system through which attributions occur (Hong et al., 1999). Depending upon the endorsed theory alternative ways of constructing reality are possible each with potential costs and benefits (Dweck et al., 1995). In particular, attributing personal adversities to fixed traits undermines resilience (Yeager & Dweck, 2012). Fixed trait attributions are more likely with individuals who endorse an entity theory of intelligence and demonstrate one way in which implicit theories lead to differences in resilience (Blackwell et. al., 2007). Specifically, implicit theories create a psychological world for an individual and depending upon which implicit theory is endorsed this world determines whether resilience is promoted (Dweck et al., 1995).

An individual's beliefs about intelligence may predict their academic performance over time especially when facing work that is challenging (Blackwell et al., 2007). Individuals who endorse an incremental theory of intelligence tend to pursue learning goals, demonstrate a

mastery-oriented motivational pattern, and thus make effort-based attributions in the face of challenges. In contrast, individuals who endorse an entity theory of intelligence tend to pursue performance goals, demonstrate a helpless motivational pattern, and thus make ability based attributions in the face of challenges. For example, an individual who believes intelligence is malleable approaches challenges with eagerness and an opportunity to develop mastery. If setbacks or barriers occur he or she focuses on changing the level of effort, adjusting strategies, and monitoring progress. This individual will likely demonstrate fewer negative symptoms and higher levels of resilience. However, a student, of equal ability, who believes intelligence is finite avoids achievement situations that are challenging, blames intelligence for struggles, experiences higher levels of anxiety, and decreased levels of resilience. Hence, measuring a student's mindset can be one of the links to determining resiliency and in turn fostering academic success.

**Resilience and motivational model of achievement.** One of the most critical issues facing educators is academic underachievement (Yeager & Dweck, 2012). In recent years educational reform has focused on improving curricula and instruction neglecting the impact of resilience on academic outcomes (Yeager & Dweck, 2012). The research reviewed in this paper demonstrates the fallacy in this approach. Additionally, it provides a viable model from which further research and interventions may be explored because students can be taught the skills to promote higher levels of resilience (Yeager & Dweck, 2012).

Research suggests a student's mindset (i.e., belief about intelligence) can be changed and by doing so encourage resilience. The implicit theories a student endorses can be changed successfully through interventions thus promoting resilience and positive academic outcomes (Aronson, Fried, & Good, 2002). In a sample of 79 undergraduates, 42 African-American

students and 37 Caucasian students, implicit theories were found to be significant in improving academic success as measured by grade point average (Aronson, et. al., 2002). The authors randomly assigned students to either an intervention group where-by the focus was changing implicit theories and a non-intervention group. The authors found that those in the treatment group demonstrated a modest (.23 points) increase in overall grade point averages by the end of the school year. The effects of learning that intelligence is improvable have been found to be greater in African American students who may face greater challenges in college than their Caucasian counterparts triggered by negative stereotypes (Steele, 1997). Students can be taught to perceive intelligence as something to be developed, that effort is vital, and the importance of adopting better strategies, promoting resilience when faced with inevitable setbacks, challenges, or obstacles (Yeager & Dweck, 2012). Based on these findings it is imperative that educators have a valid, reliable instrument to identify those students who require these specialized interventions.

### **Resilience Research and College Students**

Resilience has been studied in college students as a possible mediator between perfectionism and distress, as a link between academic outcomes among those transitioning to college, and as an impact variable on academic performance with self-esteem among international students in hospitality and tourism. Resilience has also been examined in an exploratory study with undergraduate social work students exploring the relationship with academic stress and social support (Allan et al., 2014; Klibert, Lamis, Collins, Smalley, Warren, Yancey, & Winterowd, 2012; Kwek, et al., 2013; Wilks & Spivey, 2010).

Li and Nishikawa (2012) examined resilience, self-efficacy, secure attachment, and stress

as predictors of active coping in 264 undergraduate college students at a metropolitan area United States business school and 329 Taiwanese students from a west coast business school. The authors found those who reported higher resilience to have a favorable view of stressful situations and take more risks in life. Also, self-efficacy was the strongest predictor of resilience for both samples and resilience influences college student's ability to cope with stress. However, the study sample was comprised only of business majors; therefore, it is not generalizable to all college students.

Allan et al. (2014) focused on the transition to higher education among 1,534 college students, ranging in age 17 through 49, using a four-stage analysis examining resilience and academic achievement. The study included almost equal levels of male and female students and used comparison groups. The authors utilized a four stage process of data collection: assessing resilience, connecting the resilience score to end of the year grades, data analysis to identify possible patterns between gender and total scores, and finally data analysis to identify differences in subscale scores related to gender.

The findings of this study demonstrated gender-related differences in the relationship between resilience and academic success. For example, the authors found that resilience facilitated academic performance more so in females than males overall. More, increased levels of resilience among females correlated with higher grades. Strangely, the reverse was right for the male participants, instead of increased levels of resilience correlated with decreased prospective academic performance for male participants. The authors found that male participants demonstrated higher competence ratings and trust in their abilities than females. Also, more male withdrawals were correlated with higher resilience scores. The authors theorize this might indicate a higher level of functioning. Specifically, that the men in this study might

have recognized the need to take a break from college or walk away from the college environment to preserve emotional well-being; this indicates increased self-awareness, insight, and positive decision making skills. Further, spirituality was found to be more important for females than males. However, the sample came from a single university in the United Kingdom, resilience assessment occurred before the academic year began and was not assessed again, and the sample was predominantly Caucasian recruited exclusively from sport and education faculty; therefore, the findings are not widely generalizable.

Morales (2010) studied 50 college students of color from low socio-economic statuses identified as academically resilient attending predominantly white institutions. A qualitative design examined two clusters of protective factors. Cluster 1 included the willingness to class jump, caring for school personnel, sense of obligation to race, and future orientation. Cluster 2 included work ethic, persistence, self-esteem, internal locus of control, attendance, and high parental expectations. The authors found 66% of the sample identified with cluster 1 and 70% of the sample cluster identified with cluster 2. The sample reported the proposed protective factors to be interrelated and crucial to their academic achievement. One of the limitations of this study is the sample. The sample size was small and exclusively made up of students of color with lower socioeconomic statuses, identified as gifted attending predominantly White institutions, therefore, making the findings difficult to generalize widely. A second limitation was the study design. It was exclusively qualitative a mixed methods design might have yielded a richer set of results. Nevertheless, the implications of this study are critical to understanding resilience and academic achievement among African American college students matriculating at public white institutions.

In a sample of 605 primarily Caucasian female undergraduate college students, recruited from two midwestern universities, Hartley (2011) examined the sense of belonging, resilience, mental health, and academic persistence. He found support for tenacity, tolerance of stress, and spirituality in the variance of cumulative grade point average. The Connor Davidson Resilience Scale (CD-RISC) was used to assess resilience. This study demonstrates support for the relationship between resilience factors and how undergraduate students might navigate the stress of college life. However, limitations include the use of a convenience sample, the use of a scale to assess resilience that was developed for a clinical population, and only self-report measures were used.

In their study with 145 undergraduates majoring in social work, Wilks and Spivey (2010), found support from friends was the only support factor that diminished academic stress. The authors focused on examining the relationship between academic stress and resilience through an exploratory study specifically for undergraduate social work students. The sample was comprised of mainly single, Caucasian females. Resilience, academic stress, and social support were assessed. To assess resilience a shortened version of the Resilience scale (RS). The limitations included the use of a convenience sample, assessing a limited aspect of social support (family and friends), using a measure to assess academic stress that focuses solely on the classroom, using a scale to assess resilience that has a target population of seniors ages 53- 95, and limited generalizability to undergraduate students as a whole.

There are numerous evidenced based internal and external factors associated with resilience among college students: self-efficacy (positive view of self & abilities), practical problem solving, spirituality or faith, social support and close relationships, support from parents and teachers or other influential people, mindset (implicit theories about intelligence), academic

self-regulation, high parental expectations, overcoming previous challenges, work ethic, and future orientation (Allan, 2014; Bryan, 2005; Conner & Davidson, 2003; Hartley, 2009; Huang & Lin, 2013; Johnson et al., 2015; Kim & Esquivel, 2011; Morales, 2010; Richardson, 2002; Yeager & Dweck, 2012). Clauss-Ehlers and Wibrowski (2007) report social support as a strong predictor of resilience in first-generation college students. Johnson and colleagues (2015) reported parental support as a strong predictor of resilience among first-generation college students. Furthermore, Wilks and Spivey (2010) report supportive friendships among college students as a protective factor against academic stress among undergraduate college students. Table 1 outlines empirically supported characteristics of resilience in undergraduate college students.

Table 1  
*Resilience Characteristics in Undergraduate College Students*

Reference	Characteristic
Martin & Marsh, 2006 Rutter, 1985 Clauss-Ehlers, 2007	Self-efficacy
Martin & Marsh, 2006 Allan, et al., 2014	Sense of Personal Control
Weiner & Smith, 1992 Rutter, 1985 Wilks & Spivey, 2010 Luthar, et al., 2000	Social Support-Influential
Connor & Davidson, 2003 Kim & Esquivel, 2011 Masten, 2007	Faith/spirituality
Masten, 2007 Wilks & Spivey, 2010 Johnson, et al., 2015	Social Support-friends
Morales, 2010 Johnson, et al., 2015	Parental expectations
Yeager & Dweck, 2012 Masten, 2001	Mindset
Allan, et al., 2014 Toland & Carrigan, 2011	Overcoming previous challenges

It is crucial to understand how personal attributes and external supports combine to influence academic achievement. To explain, understanding how a student maintains resilience throughout their undergraduate career, for example how a first-year student who just began college might respond to academic stressors versus a junior who has managed three years of



college life is significant. Which external and internal factors do each draw upon to sustain effort towards academic goals when faced with setbacks or challenges?

The current study theorizes undergraduate resilience includes these internal and external factors: (a) the ability to access social support networks including friends, mentors or role models, (b) a sense of personal control over his or her life, (c) the adoption of a growth mindset, (d) the instilled desire to do well by parents, guardians, or caregivers, (e) faith and/or spirituality, (f) overcoming previous challenges successfully, and (g) self-efficacy. These factors are used in the development of an instrument for measuring resilience in undergraduate college students. The current study aims to address the limitations found in other resilience research by establishing the reliability and validity of an instrument designed to evaluate resiliency specifically in undergraduate college students.

### **Measuring Resilience**

Ahern and colleagues (2006) provide a thorough review of the current instruments designed to measure resilience. The authors reviewed six different scales. Of the six scales, two (Baruth Protective Factors Inventory and Adolescent Resilience Scale) listed undergraduates as the target population for the initial study. The Adolescent Resilience Scale (ARS) did not demonstrate sound psychometric principles, and the target population was Japanese. The Baruth Protective Factors Inventory (BPFI) had no other studies in the literature and reliability and validity requires further investigation.

The Conner Davidson Resilience Scale (CD-RISC) and the Resilience Scale for Adults (RSA) both targeted clinical mental health populations. The RSA study used a non-random sample of Norwegian psychiatric patients. According to Conner and Davidson (2003), the reasons for developing the CD-RISC was two-fold: as a self-rated assessment to quantify

resilience and as a clinical measure to assess treatment outcomes. More importantly, the authors cite an interest in anxiety, depression and stress reactions as the driving force for developing their scale. The Resilience Scale (RS) targets the senior population.

According to the literature one promising study has sought to extend the study of resilience in college students by creating a scale specifically for measuring resilience in undergraduates and identifying low resilience levels in college students (Huang & Lin, 2013). The authors describe college life as difficult course requirements, time management issues, financial burdens, faculty interactions, personal goals, social activities, adjustment to campus life and inadequate support networks. More, an indicator for the development of scale to measure resilience in Taiwanese college students. The authors constructed a scale based upon a five factor model: problem solving, optimism and hope, empathy, cognitive maturity, and interpersonal interaction. The scale was subjected to peer review by guidance counselors and piloted with 993 college students. The scale was then subjected to confirmatory analysis with another 1,490 participants. The scale demonstrated good internal consistency overall and for 4 of the 5 factors.

However, this study has limited generalizability as the sample was exclusive with Taiwanese college students and the scale was designed to meet the specific characteristics of that population. Thus, based upon this review there is not a widely used, psychometrically sound scale explicitly developed to assess resilience in undergraduate college students. Given the unique experiences of the modern college student and the possibility that the resilience framework could promote positive student outcomes, a resilience scale exclusive to undergraduate college students is key. The current study is addressing this gap in the literature through development of The Resilience Scale for College Students (RSCS).

### **Chapter Three: Methodology**

A pilot study was performed to inform the current study. The pilot study informed instrument format, instrument layout, participant selection, the instructions, the wording and structure of the items, the response format, and the number of items. Pilot testing is imperative and facilitates the ability to design a reliable survey (Devellis, 1999; Fink, 2013; Kirchoff, 1999). It allows the researcher to determine items that are inappropriate or misunderstood, increases knowledge about reliability and construct validity.

Additionally, pilot testing strengthens reliability and validity by improving the ability to ensure topic inclusivity and response variety (Fink, 2013). Finally, pilot testing can clarify the amount of time it would take to administer the scale, establish if the instructions are clear, and validate the overall appearance of the instrument (Fink, 2013; Wilson, 1985). Institutional Review Board approval was sought and secured May 9, 2016, and renewed May 18th, 2017, May 23<sup>rd</sup>, 2018, and June 19, 2019.

#### **Pilot Study**

The following sections will summarize the sample, procedures, materials, and results from the pilot study.

**Sample.** The sample included 187 undergraduate students from a large public university in the south. The participants ranged in age from 18 to 37. There were 97 participants between the ages of 18 and 20, 82 between the ages of 21 and 23, and eight over the age of 24. The sample was primarily Caucasian students. There were 126 Caucasian participants, 38 African American participants, seven Hispanic students, and 16 students who identified as other. Those choosing to identify as other were also provided space to write in a response. The sample included 42 students who identified as first-generation colleges students, and 143 who identified

did not. The sample included 115 participants who self-reported grade point averages (GPA) between 2.67 and 3.65, 38 who reported GPA's between 1.80 and 2.64, 29 who reported GPA's between 3.70 and higher, and five who reported GPA's between 1.00 and 1.50. The sample included 73 participants who identified as juniors, 56 who identified as sophomores, 46 who identified as seniors, and 12 who identified as a freshman. The sample included 82 males and 105 females. The pilot study sample was recruited from the same population subjects as the current study. According to Lackey & Wingate (1998), this is necessary. Pett, Lackey, & Sullivan (2003) recommend the pilot study sample size should be 1/10 the size of the proposed study; our sample met these requirements.

**Procedures.** The pilot study utilized a convenience sample. Data collection occurred throughout three semesters: spring 2016, summer 2016, and fall 2016. The primary investigator recruited participants from the following courses: BEP 110, CJ 303, and BEP 305. The instructors were contacted individually, the study was explained in detail, and each instructor was asked to allow students to participate. Those students who participated received extra credit points based upon the instructor's discretion. BEP 110 and CJ 303 instructors allowed the primary investigator to administer the RSCS during class time. All of the study participants were encouraged to provide written feedback about the instrument. All participants received informed consent documents. The completed scales were collected as the participants finished. Students on average took seven to 10 minutes to complete. The participants were asked not to put their names on the survey to maintain confidentiality. The instructor for BEP 305 announced the study three times. The primary investigator secured the computer lab on three separate occasions to conduct the study. The students in BEP 305 who desired to participate came to the lab at pre-determined times. Each participant was asked to sign in, and the list was provided to the BEP 305 instructor

to assign extra credit points. The completed scales were kept in a secure location only accessible by the primary investigator.

**Focus Group.** A focus group was conducted to provide more comprehensive responses on resilience, assess the readability, clarity, and appropriateness of each item. There were ten focus group participants recruited from one section of BEP 110. The primary investigator explained the expectations of the focus group to the BEP 110 instructor. The instructor agreed to allow the option of participation with greater bonus points awarded given the time and effort required. The primary investigator explained the focus group expectations to the students and those who wished to participate showed up at the designated date and time. The focus group met in the same classroom as the regular class meeting. The focus group set up was informal. Students sat in a circle and participated in the session. The focus group participants were asked to complete the RSCS and after completion provided their impressions of the scale.

Next, the primary investigator posed the following prepared open-ended questions: What is resilience? What specific characteristics are involved in resilience? Please share an example of a time when you demonstrated resilience. What obstacles were you facing? Did you have support? If so, who? What stressors do you face as a college student? Was your first year different than your later years regarding stress? What helps? What keeps you from giving up?

The focus group participants found the scale in its current format to be suitable in assessing resilience. Namely, the focus group participants shared that the instructions were clear, the questions seemed to represent how they defined resilience, and the questions were clear enough. The focus group participants completed the scale within five to seven minutes.

The top responses for stressors included: deadlines, balancing work and school obligations, extracurricular expectations, parental expectations, money, nutritional needs, meeting academic

expectations of instructors, making a good impression, adjusting to college, cultural differences, social isolation, and not getting enough sleep. Friends were the top response for who helps the most in dealing with stress. Parents came next and lastly faculty members.

Self-motivation, confidence in yourself and your abilities, faith, a growth mindset, patience, endurance, hope for the future, and being internally motivated were the top factors in resilience. Those that shared a time when they had to be resilient shared failing a test or doing poorly on an assignment, losing a parent or another loss, or losing a scholarship or funding as examples. Only one of the participants shared making a good impression on his instructors was not significant. The participants who were seniors shared finding a job as a significant stressor. The current format of the RSCS reflects feedback from the focus group.

**Results.** An exploratory factor analysis using principal component analysis with varimax, orthogonal rotation using a seven fixed factor model based upon the literature review was conducted. The first two factors accounted for 31.099% of the total variance and all seven factors accounted for 52.570% of the total variance. Three or more items loaded on each factor meeting the criteria set by Pallant (2007). After examining the rotated component matrix, a seven-factor solution was retained. The item loadings were all above .305 suggesting evidence for construct validity for this instrument. The item loadings ranged from .420 to .880.

After reviewing which items loaded together and considering the conceptual framework and literature review the following names were selected for each factor: Factor I) mindset/self-efficacy, Factor II) social support-other, Factor III) parental support and expectations, Factor IV) faith, Factor V) social support-friends, Factor VI) personal control, and Factor VII) overcoming challenges. The findings of the pilot study provided support for the current sample, procedures, materials, and data analysis for this study. The Cronbach Alpha for this scale is .899. More

importantly, the pilot study informed scale development. Specifically, though the RSCS demonstrated reliability and construct validity, the current study focused on further critiquing of the scale items, evaluating, refining, naming and interpreting factors, and supporting the proposed seven-factor model. According to Rosenthal and Rosnow (1991) pilot testing a new scale is essential to scale development. The following sections will review the methodology for the current study.

### **Current Study**

**Sample.** In order to recruit the number of participants needed and given the location of the research study at an IHE, a sample of convenience was used to recruit participants. Participants included undergraduate college students enrolled at the University of Alabama. Participants were recruited from introductory and upper-level courses to create a sample representative of each classification. All majors were considered to establish a diverse sample. Participants were recruited fall semester 2018 and spring semester 2019. The current study included 338 participants per the guidelines of Comrey and Lee (1992) this is a good size for factor analysis. Tabachnick & Fidell (2001) report “as a general rule of thumb, it is comforting to have at least 300 cases for factor analysis” (p. 588). The sample included 82 males (24.3%) and 256 females (75.7%). The sample included 30 (8.9%) participants who self-identified as African American, 287 (84.9%) who self-identified as Caucasian, eight (2.4%) who self-identified as Hispanic, and 13 (3.8%) who self-identified as Other. The sample included 60 (17.8%) first generation college students and 278 (82.2%) who were not first-generation college students. The sample included 262 (77.5%) students ages 18-20, 68 (20.1%) ages 21-23, and eight (2.4%) age 24 years of age and older. The sample included three students (9%) with grade point averages

(gpa) between .00 through 1.33, ten (3.0%) with gpa's between 1.34 through 2.33, 141 (41.7%) with gpa's between 2.34 through 3.33, and 184 (54.4%) with gpa's 3.34 and above.

**Procedures.** The primary investigator contacted each instructor by email to gain permission to recruit for the study during class time. The primary investigator explained the details of the study, read the instructions for the RSCS, and explained the informed consent document. The informed consent document was provided to each participant. The RSCS in its current format was administered. The primary investigator set up specific days and times weekly for potential study participants to take the RSCS at a secured location on campus. The primary investigator administered during class time when permitted by the instructor. All collected scales were kept in a secure location only accessible to the primary investigator. The scale took about seven to ten minutes to complete. Bonus points for participation were awarded at the discretion of the instructor.

**Materials.** The Resilience Scale for College Students (RSCS) is a 40-item forced response scale with six demographic items. The questions in the order represented on the scale are in Table 2. The items were placed randomly on the instrument. The RSCS is presented in 12-point Times New Roman font. The RSCS is longer than one page, so it is printed front and back to increase the likelihood of full completion. The RSCS is three pages in total. The instructions on the RSCS satisfy two goals as outlined by (Spencor,1992): provide participants directions for use and a standard frame of reference for the construct resilience. The six demographic items are age, gender, classification, generation, gpa, and race.

The scale measures resilience in undergraduate college students based upon a proposed seven-factor model: mindset/self-efficacy, social support-friends, social support-others, parental support & expectations, faith, personal control, and overcoming previous challenges. The



statements for the RSCS were created based on the literature review. The Flesh-Kincaid grade level is 7.7, and the Flesh-Kincaid reading ease score is 61.2. Participants were asked to respond to statements based upon a 4-point Likert scale: strongly disagree, disagree, agree, and strongly agree. The RSCS is designed to create a total score after completion. When summed higher scores indicate higher levels of resilience and lower scores indicate lower levels of resilience. The maximum score is 160, and the minimum score is 40. Resilience scores are divided into three groups: high, medium, and low. Those scoring above 121 are grouped into the high resilience group. Those scoring between 81 and 120 are grouped into the medium resilience group. Those that score below 80 are grouped into the low resilience group.

The Cronbach's alpha for the 40 item RSCS scale is .899. The reliability coefficient .899 demonstrates that the instrument is reliable based upon the standard set by Gliem and Gliem (2003). Gliem and Gliem (2003) asserts a Cronbach's alpha value that is greater than .80 is considered good. To establish content validity, the RSCS was subjected to peer evaluation before the pilot test to evaluate the scale for clarity, overall appearance, and appropriateness of responses as advised by (DeVellis,1991). Established clinicians and counselor educators served as peer evaluators. The RSCS was emailed to three peer evaluators with the instructions to take the survey and provide feedback in the areas mentioned above. The current RSCS reflects feedback provided by the peer evaluators.

Table 2  
*Resilience Scale for College Students (RSCS) Questions*

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1. Failure is an opportunity for growth.
  2. When I fail I know I can bounce back.
  3. Making mistakes is a part of the learning experience.
  4. If I make a mistake I try to learn from it.
  5. If I am successful it is based upon my abilities.
  6. If I succeed it is because of my effort.
  7. I have what it takes to be successful.
  8. When obstacles arise I can think of solutions to overcome them.
  9. Problems are a part of life.
  10. I am in control of my future.
  11. When I have problems I talk to my friends.
  12. Talking to my friends helps when I am stressed.
  13. Talking to my family helps when I am stressed.
  14. If I have a problem I cannot solve I have someone to ask for help.
  15. Working hard is the best way to be successful.
  16. I have overcome obstacles to be where I am today.
  17. Making my parents proud is important to me.
  18. My parents made sacrifices so I could pursue my dreams.
  19. I am where I am because my parents invested in me.
  20. Encouragement from others motivates me.
  21. Building relationships with my instructors is important to me.
  22. Making sure my instructors know my name is important to me.
  23. Making a good impression with my instructors is important.
  24. Setbacks will happen, but I know I can overcome them.
  25. When things get tough I try harder.
  26. Having a good role model is important to being successful.
  27. Knowing my parents believe in me keeps me going.
  28. Believing in something larger than myself motivates me.
  29. My faith helps me when I am stressed.
  30. When things go wrong my faith helps me stay motivated.
  31. Avoiding problems makes things worse.
  32. My family is counting on me to succeed.
  33. Giving up is not an option.
  34. I can think through my problems to identify solutions.
  35. The harder I try the closer I get to achieving my goals.
  36. When I experience setbacks I adjust my strategies.
  37. When things get tough knowing that others believe in me is important.
  38. When I experience a setback I still believe in my ability to succeed.
  39. I face challenges head on.
  40. I am in charge of my future.
-

## Primary Study Data Analysis

Descriptive analysis was conducted. The data was checked for normality. Steps were taken to determine if there were sufficient numbers of significant correlations to justify the use of factor analysis. First, Bartlett's Test of Sphericity was used to test the null hypothesis that the correlation matrix is an identity matrix. Second, Kaiser-Meyer-Olkin Test (KMO) was used to determine if the sample size was adequate in relation to the number of items in the RSCS. Third, DeCarlo's SPSS Macro was used to assess normality. Finally, Individual Measures of Sampling Adequacy (MSA) was used to determine if the correlations between individual items are sufficient and the correlation matrix is factorable. The correlation matrix was examined to identify items that are too highly correlated (correlations that are greater than or equal to .90) or not correlated strongly enough (correlations that are less than .30). Correlations that are above .90 might indicate a problem with multicollinearity (Young & Pearce, 2013). The determinant score was examined to assess multicollinearity.

Exploratory factor analysis with varimax, orthogonal rotation was conducted. By employing rotation, we make the output easier to understand and interpret. The expected outcome of rotation is an optimal simple structure with limited split loadings and maximized high loadings on each variable (Rummel, 1970). Varimax is the most popular orthogonal rotation because it makes large loadings larger and small loadings smaller, increases the chances of more factors, diminishes the likelihood of a general factor producing instead more group factors thereby supporting the hypothesis of this study (Russell, 2002; Yong & Pearce, 2013).

Exploratory factor analysis is best when a researcher does not know how many factors are necessary to explain the relationships between a set of items (Tabachnick & Fidell, 2001). Furthermore, it is the most commonly used form of factor analysis in health care research (Pett,

Lackey, & Sullivan, 2003). The following steps in exploratory factor analysis were examined in the current study: assumption checks, extracting and rotating factors, refining the solution, and interpreting and reporting the findings. Internal consistency was used to establish reliability. Cronbach alpha was used to estimate internal consistency. The current study sought to meet Gliem and Gliem's (2003) standard for a good Cronbach's alpha value of greater than .80. The methods of factor analysis facilitate the goal of concisely describing and summarizing the interrelationships among the items of the RSCS. Further, factor analysis is useful for providing many of the tools necessary to define the underlying dimensions in construct validity for the instrument.

According to guidelines by Comrey and Lee (1992) when using orthogonal rotation item loadings below .30 should not be included in defining a factor because less than 90% of that item's variance is shared with the factor. In addition, the authors offer the following guidelines when evaluating item to factor loadings in orthogonal rotation: .45 (20% shared variance) is fair, .55 (30% shared variance) is good, .63 (40% shared variance) is very good, and .71 (50% of shared variance) is excellent.

Patt et al., (2003) highlight the importance of considering relevance when making decisions about poor loading items. Several suggestions are found in the literature regarding items that load on multiple factors. Kline (2000) suggests dropping items that load on multiple factors to decrease the level of difficulty in interpretation. Patt et al., (2003) advise placing the multiple loading items with the factor they most closely align with conceptually. The next chapter will report the findings of the aforementioned steps.

## Chapter 4: Results

First, descriptive analysis for each item (i.e., mean, standard deviation) was conducted.

As with any analysis, descriptive statistics must be checked to confirm that the data do not have any major anomalies (Green & Salkind, 2013). As shown in Table 3, all the means are fairly similar which may indicate the items are tapping into the same underlying concept. The means are all within the range of possible values for this data and the scores ranged from 2.99 (Question 2) to 3.71 (Question 17). In addition, there are no unusually large variances that might indicate input errors. The standard deviation range was from .493 (Question 3) to 1.00 (Question 29).

Table 3  
*Descriptive statistics for Resilience Scale for College Students (RSCS) (n=338)*

Item	Mean	Std. deviation	Item	Mean	Std. deviation
Q1	3.44	.595	Q21	3.19	.666
Q2	3.31	.597	Q22	2.99	.751
Q3	3.66	.493	Q23	3.48	.587
Q4	3.64	.499	Q24	3.45	.555
Q5	3.09	.636	Q25	3.30	.632
Q6	3.42	.593	Q26	3.37	.707
Q7	3.62	.532	Q27	3.52	.659
Q8	3.33	.556	Q28	3.49	.711
Q9	3.68	.528	Q29	3.17	1.000
Q10	3.25	.696	Q30	3.14	.995
Q11	3.12	.780	Q31	3.28	.744
Q12	3.20	.772	Q32	3.18	.770
Q13	3.24	.861	Q33	3.65	.530
Q14	3.27	.736	Q34	3.29	.565
Q15	3.66	.534	Q35	3.51	.567
Q16	3.60	.515	Q36	3.20	.520
Q17	3.71	.522	Q37	3.46	.612
Q18	3.61	.622	Q38	3.31	.628
Q19	3.65	.578	Q39	3.22	.654
Q20	3.55	.591	Q40	3.45	.648

## Checking Assumptions

The study examined the characteristics of the data matrices using the DeCarlo's SPSS Macro to test for multivariate normality, Bartlett's test of sphericity, Kaiser-Meiyer-Olkin Test (KMO), and the individual measure of sampling adequacy (MSA). The DeCarlo's SPSS Macro normality test detected statistically significant univariate skew and kurtosis for most items. The test indicated a violation of multivariate skew for both Small's test ( $p < .000$ ) and Srivastava's test ( $p < .000$ ). In addition, there was a violation of multivariate kurtosis for the variant of Small's test ( $p < .000$ ), Srivastava's test ( $p < .000$ ) and Mardia's test ( $p < .000$ ). The omnibus test of multivariate normality was statistically significant ( $p < .000$ ) indicating a violation. The violation of multivariate normality assumptions indicates the exploratory factor analysis employed must use the unweighted least square (ULS) extraction method.

The Bartlett's test of sphericity for the 40 items of the RSCS is statistically significant ( $p < .05$ ). The determinant  $|R|$  for items 1 to 40 yielded  $5.435E-8$  indicating the matrix is not singular. Bartlett's test of sphericity indicates the correlation matrix is not an identity matrix therefore the participant responses to the RSCS is factorable. The Kaiser-Meyer-Olkin Test (KMO) statistic is meritorious (Kaiser, 1974) indicating the correlation matrix is suited for factor analysis using the current sample. The anti-image values for individual measures of sampling adequacy (MSA) range from .665 to .945 indicating that the correlations among individual items is sufficient for factor analysis. Only question 9 at .590 is below .60 indicating mediocre status according to the Kaiser criteria. The MSA statistic indicate the correlations among individual items are strong enough to suggest that the correlation matrix is factorable.

## **Exploratory Factor Analysis**

Factor analysis is useful for providing many of the tools necessary to define the underlying dimensions in construct validity and for providing validity evidence for the instrument. Determining the number of factors to retain is important and extensive research has been conducted on the methods we should use in determining how many factors to retain; However, there is no general consensus on the appropriate criteria to use (Hayton, Allen, & Scarpello, 2004). We can use the criteria available to assist us in making the best decisions knowing that they will not always lead to the same or similar results (Carraher & Buckley, 1991; Thompson & Daniel, 1996; Zwick & Velicer, 1986).

An exploratory factor analysis was conducted using unweighted least squares (ULS) with varimax rotation. Normality was violated for our sample therefore unweighted least squares was conducted. There were 10 factors extracted with eigenvalues of 1.00 or greater. The first two factors explained 27.665% of the total variance and all ten factors explained 48.566% of the variance. Eigenvalues  $> 1$  is not a recommended criterion for samples that violate normality therefore this model was not retained. Instead this study uses parallel analysis, the scree plot, and the amount of explained variance to determine the number of significant factors for the final model.

There is evidence that parallel analysis (Horn, 1965) is one of the most accurate methods for determining the number of factors to retain ( Velicer, Eaton, & Fava, J.L., 2000; Zwick & Velicer, 1986), yet one of the most underutilized methods (Fabrigar, Wegener, MacCallum, & Strahan, 1999; Ford, MacCallum, & Tait, 1986). Parallel analysis is the one approach that formally tests the probability that a factor is due to chance, can minimize the over identification of factors based upon sampling error, identifies the number of factors prior to the exploratory

factor analysis, and better than the reliance solely on eigenvalues (Wood, Gnonhosou, & Bowling, 2015). The scree plot is recommended by Costello and Osborne (2005) but best when the elbow is clear not in the case of multiple slopes or when the slope is not as defined.

A communality is the extent to which an item correlates with other items. Higher communalities are better. If communalities are low for a particular variable then the variable may struggle to load significantly on any factor. Factor analysis uses variances to create communalities between items. The communality is said to be the amount of variance accounted for by the common factors (Child, 2006). A set of factors with high communalities are said to explain a lot of variance within a variable (Kline, 1994). Often in factor analysis items with low communalities are eliminated from analysis because the goal is to try and explain the variance through common factors (Child, 2006). There is no fixed cut off value for communalities. It is best to review the communalities values in conjunction with examining the rotated factor matrix to determine how the item is performing. Some experts suggest communalities values .40 and above are sufficient (Osborne, Costello, & Kellow, 2008). In contrast, Child (2006) suggests communalities below .20 should be deleted. For the purposes of this study a low communality was defined as being less .3 and selected for deletion if the item split loads or would increase the reliability with deletion. To summarize, examining the communality value is but one step in the process of deciding whether to delete an item from a scale. Remember the goal is to explore the data and apply steps to create the best solution that explains the data. The communality values for all four models are in Table 8.

**Model 1.** The parallel test with the full scale of 40 items extracted nine factors. The scree plot was also examined. An exploratory factor analysis was conducted using unweighted least squares (ULS) with varimax rotation and a fixed nine factor solution. Varimax rotation was



selected because it is the most popular orthogonal rotation, it makes large loadings larger and small loadings smaller tending towards group factors instead of one general factor. The first two factors explained 27.6% of the total variance and all nine factors explained 46.5% of the variance. Communalities were examined to evaluate the significant items. Items one (.214), five (.239), nine (.099), 15(.252), 26 (.280), 31(.100), and 33(.243) had communality values less than .3. When the rotated factor matrix was examined, question 33(.256), question 31 (.178), and question 9 (.274) all loaded below .3 and questions 38, 25, 20, and 37 were double loaded. Table 4 has the item loadings and values for each factor. The seven items with communalities below .3 were deleted and model two was run.

**Model 2.** The parallel test with 33 items extracted nine factors. The scree plot was also examined. An exploratory factor analysis was conducted using unweighted least squares (ULS) with varimax rotation and fixed nine factor solution. The first two factors accounted for 33.1% of the variance and all nine factors accounted for 52.6% of the variance. Question six (.263), question 16 (.234), and question 32 (.280) had communalities lower than .3. When the rotated factor loading matrix was examined factor 9 did not have any loadings and questions 20, 13, 18, and 35 all double loaded. Table 5 has item loadings and values for each factor. The three items with communalities below .3 were deleted and model three was run.

**Model 3.** The parallel test with 30 items extracted six factors. The scree plot was also examined. An exploratory factor analysis was conducted using unweighted least squares (ULS) with varimax rotation and fixed six factor solution. The first two explained 32.8% of the total variance and all six factors 50.1% explained of the total variance. The communalities were examined and question 3 (.274) and question 4(.281) had communalities below .3. When the rotated factor loading matrix was examined there were no loadings below .3 and question 20 was

the only item to double load. The two items with communalities below .3 were deleted and model four was run. Table 6 has the item loadings and values for each factor.

**Model 4.** An exploratory factor analysis with a fixed six factor solution using unweighted least squares with varimax rotation was conducted with 28 items. The first two factors accounted for 33.8% of the variance and all six factors accounted for 52% of the total variance. The scree plot was also examined. There were no communalities below .3. When the rotated factor loading matrix was examined using a .4 cutoff every factor had at least two loadings. There were no factor loadings below the .4 cutoff. The loadings range from .432 to .954. For those reasons this model was retained as the best one. Table 7 has the item loadings and values for each factor. According to Comrey and Lee (1992) the range of loadings represent fair (20%) to excellent (50%) amount of shared variance.

The factor loadings were assigned the following factor names based upon how the items loaded: Factor 1: mindset/self-efficacy/overcoming challenges, Factor 2: social support-friends, Factor 3: parental expectations, Factor 4: faith, Factor 5: social support-instructors, and Factor 6: personal control. Table 9 has the reliability analysis for each factor. The results are as follows based upon Gliem and Gliem (2003): Factor 1: .863 and good, Factor 2: .776 and acceptable, Factor 3: .785 and acceptable, Factor 4: .883 and good, Factor 5: .820 and good, and Factor 6: .779 and good. The Cronbach's Alpha for the final model is .894. The next section will summarize the revisions to the scale.

### **The Resilience Scale for College Students (RSCS)**

The original Resilience Scale for College Students (RSCS) included 40 forced response items and six demographic items based upon a proposed seven factor model with a Cronbach's alpha of .893. The seven factors are mindset/self-efficacy, faith, overcoming previous challenges,

personal control, social support-friends, social support-others, and parental expectations. The Resilience Scale for College Students (RSCS) uses a 4 point Likert scale: strongly disagree, disagree, agree, and strongly agree. The six demographic items are: gender, classification, race, first generation status, grade point average (gpa), and age. The maximum score was 160 and the minimum score was 40. The scores were divided into three groups. Those scoring 80 or less were grouped into the low resilience group. Those scoring between 81 and 120 were grouped into the medium resilience group. Those scoring 121 or more were grouped into the high resilience group.

The revised Resilience Scale for College Students (RSCS) has 28 forced response items and six demographic items based upon a six factor model. Questions 1, 3, 4, 5, 6, 9, 15, 16, 26, 31, 32, and 33 were deleted resulting in a 28 item scale. The factors are still the same however overcoming previous challenges combined with mindset/self-efficacy to create one factor. The Cronbach's Alpha is .894. The maximum score is 112 and the minimum score is 28. The scores are divided into three groups. Those scoring 56 and below are grouped into the low resilience group. Those scoring between 57 and 84 are grouped into the medium resilience group. Those scoring 85 or more are grouped into the high resilience group. The groupings correspond to the Likert scale. Specifically, those with mainly ones and twos are in the low group, those with two's and threes are in the medium group and those with threes and fours are in the high group.

The RSCS is designed to create a total score that corresponds to an overall grouping into either low, medium, or high resilience. The assessment can be taken one step further by reviewing individual responses. Each question on the scale corresponds to a specific factor. Table 10 provides each question and corresponding factor for the revised RSCS. For example, a student that has a score of 40 (low) and has answered strongly disagree or disagree (ones and

twos) to questions within factor one (mindset/self-efficacy/overcoming challenges), we might encourage this student to enroll in a course designed to provide instruction in those areas i.e. BEP 110. The final chapter will briefly summarize findings, explore limitations, and future studies.

Table 4

Model 1 Exploratory Factor Analysis using ULS with Varimax  
Rotation Nine Factor Solution 40 Items (n=338)

	Factor								
	1	2	3	4	5	6	7	8	9
q24	<b>.665</b>	.026	.053	.105	.146	.152	.167	.089	-.015
q2	<b>.623</b>	.124	-.009	.101	.100	.060	.062	.046	.142
q34	<b>.595</b>	.032	.165	-.016	.239	.077	.068	.021	-.111
q38*	<b>.594</b>	.061	.058	.159	<b>.327</b>	.130	.158	-.201	-.044
q3	<b>.555</b>	.161	.045	.042	-.045	.052	.042	.023	.217
q8	<b>.527</b>	.062	.071	.073	.205	.103	.116	.112	-.282
q4	<b>.523</b>	.034	.155	.037	-.101	.126	-.012	.205	-.041
q25*	<b>.516</b>	.020	.021	.218	<b>.313</b>	.186	.098	.114	-.180
q39	<b>.489</b>	.131	-.011	.056	.281	.103	.123	-.183	-.093
q36	<b>.487</b>	-.067	.192	.067	.269	.141	.213	.119	.102
q1	<b>.419</b>	.056	.082	-.017	-.053	.024	-.032	.067	.141
q7	<b>.399</b>	.195	-.016	.047	.294	.115	.061	.097	-.099
q33	<b>.256</b>	.209	-.109	.060	.201	.088	.065	.224	-.126
q19	.065	<b>.712</b>	.138	.109	.018	.072	.132	-.099	.003
q17	.086	<b>.639</b>	.127	.134	.126	.073	-.026	.153	.143
q27	.141	<b>.638</b>	.217	.206	.160	.095	-.123	.086	.131
q18	.015	<b>.611</b>	.051	.062	-.041	.029	.284	-.125	-.191
q32	.104	<b>.468</b>	-.074	.118	.013	.234	-.036	.201	-.156
q20*	.104	<b>.438</b>	<b>.375</b>	.068	.099	.143	.133	.088	.254
q26	.126	<b>.331</b>	.121	.142	.174	.242	.100	-.028	.141
q11	.021	.123	<b>.833</b>	.049	.032	.075	-.049	.017	.030
q12	.038	.079	<b>.788</b>	.051	.005	.093	-.050	.069	-.067
q14	.162	.082	<b>.535</b>	.038	.029	.028	.093	.066	.045
q13	.196	.386	<b>.451</b>	.127	.102	-.039	-.247	.063	.023
q37*	.184	.243	<b>.393</b>	.153	.227	.148	.156	.033	<b>.383</b>
q29	.103	.207	.060	<b>.941</b>	-.002	.098	-.026	.077	.024
q30	.136	.232	.078	<b>.901</b>	.007	.126	-.043	.078	-.001
q28	.160	.256	.169	<b>.535</b>	.191	.152	.182	.058	.016
q40	.128	.101	.017	-.054	<b>.775</b>	.036	-.147	.125	.019
q10	.111	.035	.050	-.004	<b>.640</b>	.029	-.045	.134	-.016
q35	.323	.103	.059	.186	<b>.432</b>	.173	.143	.124	.072
q15	.159	.047	.011	.069	<b>.349</b>	.191	.212	.058	.114
q31	.093	.129	.123	.075	.178	.037	.136	-.025	-.041
q22	.177	.110	.030	.119	.066	<b>.818</b>	.006	-.007	-.079
q21	.201	.138	.100	.066	.092	<b>.774</b>	.045	.021	.050
q23	.195	.157	.129	.099	.115	<b>.596</b>	.098	.086	.055
q16	.116	.114	.011	.004	.077	.080	<b>.540</b>	.185	-.068
q9	.132	.021	-.024	.003	-.040	.008	<b>.274</b>	-.021	.053
q5	.118	.030	.086	.034	.131	.036	.062	<b>.440</b>	.023
q6	.089	.039	.135	.172	.303	.012	.064	<b>.423</b>	-.00

Note. Factor loadings > .30 are in boldface. Double loadings are designated with \*.

The factor loadings in Table 4 demonstrate the problematic structure for Model 1. Factor 9 has only one item to load (question 37). The model has four items (question 38, question 25, question 20 and question 37) to double load. The model has two items (question 33 and question 9) to load below the .30 cutoff. The factor loadings range from .256 to .941. For these reasons this model was not retained and model 2 was run.

Table 5  
*Model 2 Exploratory Factor Analysis using ULS with Varimax  
 Rotation Nine Factor Solution 33 Items (n=338)*

	Factor								
	1	2	3	4	5	6	7	8	9
q24	<b>.715</b>	.029	.087	.046	.138	.050	.063	.058	.091
q38	<b>.660</b>	.059	.131	.033	.106	.188	.083	.095	-.308
q2	<b>.614</b>	.121	.098	-.012	.048	.032	.164	-.037	-.104
q34	<b>.613</b>	.031	-.027	.151	.079	.168	.023	.103	.099
q25	<b>.589</b>	.019	.215	.031	.170	.235	-.070	.123	.014
q8	<b>.575</b>	.061	.070	.083	.097	.143	-.133	.184	.171
q36	<b>.537</b>	-.067	.064	.168	.125	.192	.195	.143	-.098
q39	<b>.533</b>	.124	.034	-.027	.084	.157	-.007	.082	-.195
q3	<b>.510</b>	.162	.036	.045	.053	-.071	.149	-.126	.037
q4	<b>.498</b>	.050	.047	.175	.129	-.074	-.037	-.066	.099
q7	<b>.454</b>	.188	.047	-.013	.103	.224	-.009	.117	.131
q35*	<b>.380</b>	.079	.191	.042	.159	<b>.353</b>	.195	.184	.103
q19	.081	<b>.709</b>	.102	.117	.074	-.019	.092	.124	-.064
q18*	.046	<b>.661</b>	.050	.052	.021	-.086	-.168	<b>.328</b>	-.233
q27	.143	<b>.634</b>	.214	.211	.103	.167	.162	-.164	.128
q17	.087	<b>.626</b>	.154	.125	.080	.126	.201	-.038	.079
q32	.102	<b>.422</b>	.152	-.039	.241	.056	-.059	.039	.041
q29	.115	.198	<b>.942</b>	.057	.097	-.012	.051	-.031	-.006
q30	.150	.222	<b>.909</b>	.081	.123	-.007	.021	-.049	-.028
q28	.203	.243	<b>.536</b>	.148	.147	.143	.110	.199	.060
q11	.011	.102	.056	<b>.850</b>	.076	.044	.117	-.018	-.150
q12	.033	.072	.061	<b>.788</b>	.101	.035	.023	.001	.002
q14	.173	.086	.035	<b>.533</b>	.017	-.001	.086	.084	.119
q13*	.176	<b>.387</b>	.136	<b>.470</b>	-.033	.131	.020	-.236	.119
q22	.205	.109	.118	.032	<b>.824</b>	.037	-.048	.016	-.027
q21	.221	.124	.070	.089	<b>.762</b>	.055	.098	.047	-.051
q23	.226	.147	.102	.117	<b>.595</b>	.070	.128	.085	.077
q40	.176	.097	-.038	.009	.056	<b>.873</b>	.054	-.085	-.077
q10	.187	.042	.010	.045	.037	<b>.638</b>	.003	.023	.005
q6	.137	.021	.204	.141	.016	<b>.314</b>	.081	.177	.213
q37	.207	.205	.143	.336	.126	.131	<b>.583</b>	.088	-.005
q20*	.112	.420	.068	<b>.326</b>	.141	.052	<b>.420</b>	.109	.028
q16	.191	.112	.013	.000	.079	.021	.066	<b>.416</b>	.009

Note. Factor loadings > .30 are in boldface. Double loadings are designated with \*.

Table 5 demonstrates the problems with Model 2. The primary problem is factor nine with no item loadings. Also, factor eight only has one item (question 18) loading. There are also three items (question 35, question 18, and question 20) that double loaded. All of the item loadings meet the .30 criteria. The loadings range from .314 to .942. This model was not retained because factor 9 has no item loadings.

Table 6  
*Model 3 Exploratory Factor Analysis using ULS with Varimax Rotation Six Factor Solution 30 Items (n=338)*

	Factor					
	1	2	3	4	5	6
q24	<b>.720</b>	.037	.066	.084	.128	.027
q38	<b>.663</b>	.078	.044	.114	.111	.159
q34	<b>.636</b>	.038	.155	-.040	.073	.132
q25	<b>.615</b>	.008	.019	.200	.164	.181
q2	<b>.604</b>	.146	.025	.087	.045	.014
q8	<b>.588</b>	.035	.063	.066	.084	.105
q36	<b>.561</b>	-.044	.210	.050	.128	.168
q39	<b>.546</b>	.130	-.037	.025	.084	.133
q3	<b>.480</b>	.170	.086	.041	.042	-.064
q7	<b>.476</b>	.186	-.014	.037	.099	.186
q4	<b>.474</b>	.019	.184	.050	.102	-.092
q35*	<b>.428</b>	.114	.082	.174	.170	<b>.322</b>
q19	.094	<b>.755</b>	.099	.088	.088	-.024
q27	.132	<b>.626</b>	.246	.226	.094	.174
q17	.090	<b>.624</b>	.169	.160	.077	.131
q18	.066	<b>.553</b>	.006	.064	.050	-.072
q20*	.136	<b>.472</b>	<b>.389</b>	.062	.159	.067
q11	.008	.110	<b>.841</b>	.045	.073	.030
q12	.028	.073	<b>.767</b>	.049	.096	.005
q14	.175	.103	<b>.536</b>	.029	.021	-.014
q13	.148	.361	<b>.459</b>	.140	-.043	.109
q37	.235	.289	<b>.416</b>	.137	.151	.157
q29	.125	.192	.076	<b>.951</b>	.090	-.021
q30	.158	.208	.096	<b>.908</b>	.113	-.018
q28	.242	.280	.153	<b>.513</b>	.166	.119
q22	.218	.088	.025	.124	<b>.792</b>	.024
q21	.235	.130	.101	.066	<b>.788</b>	.046
q23	.247	.146	.150	.105	<b>.587</b>	.070
q40	.205	.073	.037	-.022	.045	<b>.869</b>
q10	.215	.026	.054	.019	.033	<b>.641</b>

Note. Factor loadings > .30 are in boldface.  
 Double loadings are designated with \*.

Table 6 represents the factor structure for model 3. Model 3 comes close to being a sufficient model because every factor have at least three items to load; however, there are two items (question 35 and question 20) to double load therefore it is not the simplest solution for the data. The goal is to obtain the simplest factor solution to explain the data. This means trying to achieve a factor solution that does not contact any split loadings. This model was not retained and Model 4 was run to see if a model could be achieved without split loadings.

Table 7  
*Model 4 Exploratory Factor Analysis using ULS with Varimax Six Factor Solution 28 Items*

	Factor					
	1	2	3	4	5	6
q38	<b>.690</b>	.062	.079	.107	.105	.098
q24	<b>.682</b>	.077	.039	.089	.139	.019
q34	<b>.643</b>	.171	.037	-.044	.071	.086
q25	<b>.641</b>	.029	.015	.193	.156	.129
q8	<b>.599</b>	.070	.047	.059	.077	.061
q39	<b>.583</b>	-.020	.134	.014	.074	.069
q2	<b>.576</b>	.038	.143	.092	.056	.006
q36	<b>.563</b>	.218	-.042	.047	.128	.137
q7	<b>.492</b>	.000	.185	.035	.099	.148
q35	<b>.464</b>	.095	.113	.167	.164	.270
q11	-.005	<b>.840</b>	.104	.046	.073	.031
q12	.024	<b>.770</b>	.068	.047	.094	-.004
q14	.156	<b>.536</b>	.102	.030	.023	-.015
q13	.132	<b>.459</b>	.358	.145	-.037	.119
q37	.245	<b>.432</b>	.276	.138	.153	.133
q19	.090	.108	<b>.754</b>	.089	.089	-.032
q17	.084	.172	<b>.624</b>	.164	.082	.140
q27	.122	.250	<b>.622</b>	.232	.101	.186
q18	.073	.011	<b>.562</b>	.060	.045	-.090
q20	.127	.395	<b>.466</b>	.065	.162	.065
q29	.121	.077	.186	<b>.954</b>	.093	-.019
q30	.154	.098	.204	<b>.908</b>	.115	-.018
q28	.263	.162	.278	<b>.508</b>	.161	.087
q22	.215	.025	.088	.123	<b>.793</b>	.022
q21	.229	.101	.130	.066	<b>.786</b>	.043
q23	.255	.159	.138	.104	<b>.591</b>	.051
q40	.247	.033	.071	-.024	.043	<b>.896</b>
q10	.247	.056	.023	.018	.034	<b>.625</b>

Note. Factor loadings > .40 are in boldface.



Table 7 represents the best solution for the data. The model has no split loadings, all the loadings are above the .40 criteria, and the item loadings explain at minimum 20 % of the variance and at maximum more than 50% of the variance (Comrey & Lee, 1992). The items range from .432 to .954. Factor 6 only has two loadings (question 40 and question 10); however, these loadings are both well above the .4 cutoff and having a solution that does not have split loadings is easier to interpret (Kline, 2000). Question 40 and question 10 loaded together and are similar. In Model 3, question 35 double loaded on factor 1 and factor 6. In Model 4 it only loads on factor 1 which is a better fit.

Table 8  
*Communality Values: All four models (n=338)*

	Model 1	Model 2	Model 3	Model 4
q1	<b>0.214</b>	q2 0.443	q2 0.396	q2 0.365
q2	0.453	q3 0.337	q3 <b>0.274</b>	q7 0.309
q3	0.392	q4 0.321	q4 <b>0.281</b>	q8 0.379
q4	0.370	q6 <b>0.263</b>	q7 0.307	q10 0.457
q5	<b>0.239</b>	q7 0.336	q8 0.373	q11 0.725
q6	0.333	q8 0.457	q10 0.462	q12 0.609
q7	0.322	q10 0.448	q11 0.727	q13 0.393
q8	0.451	q11 0.780	q12 0.605	q14 0.324
q9	<b>0.099</b>	q12 0.642	q13 0.396	q17 0.479
q10	0.447	q13 0.509	q14 0.330	q18 0.335
q11	0.723	q14 0.351	q17 0.475	q19 0.605
q12	0.652	q16 <b>0.234</b>	q18 0.322	q20 0.424
q13	0.485	q17 0.509	q19 0.605	q21 0.704
q14	0.338	q18 0.642	q20 0.426	q22 0.698
q15	<b>0.252</b>	q19 0.567	q21 0.709	q23 0.472
q16	0.369	q20 0.511	q22 0.699	q24 0.500
q17	0.515	q21 0.675	q23 0.465	q25 0.491
q18	0.515	q22 0.753	q24 0.548	q27 0.563
q19	0.575	q23 0.485	q25 0.479	q28 0.464
q20	0.468	q24 0.559	q27 0.560	q29 0.975
q21	0.686	q25 0.500	q28 0.465	q30 0.913
q22	0.738	q27 0.621	q29 0.970	q34 0.458
q23	0.478	q28 0.506	q30 0.915	q35 0.365
q24	0.537	q29 0.956	q34 0.454	q36 0.404
q25	0.502	q30 0.924	q35 0.365	q37 0.383
q26	<b>0.280</b>	q32 <b>0.280</b>	q36 0.408	q38 0.518
q27	0.590	q34 0.456	q37 0.378	q39 0.369
q28	0.503	q35 0.421	q38 0.498	q40 0.873
q29	0.959	q36 0.446	q39 0.341	
q30	0.914	q37 0.599	q40 0.806	
q31	<b>0.100</b>	q38 0.614		
q32	0.370	q39 0.378		
q33	<b>0.243</b>	q40 0.823		
q34	0.463			
q35	0.411			
q36	0.445			
q37	0.516			
q38	0.577			
q39	0.406			
q40	0.669			

Note. Communality values < .30 are in boldface.

Table 8 provides a visual representation of the communalities values for each item with every model progression. By the end of the analysis a total of 12 items were deleted: questions 1, 3, 4, 5, 6, 9, 15, 16, 26, 31, 32, and 33. In the first model items 1, 5, 9, 15, 26, 31, and 33 were below the .30 criteria and deleted. In the second model items 6, 16, and 26 were deleted. In the third model items 3 and 4 were deleted. After the third progression of analysis there were no communality values below the .30 criteria therefore no items were required deletion. As the analysis progressed the number of communality values below the .30 criteria decreased, from seven items deleted to three items deleted to two items deleted.

Table 9  
*Resilience Scale for College Students (RSCS) Six Factor Model 28 Items*

Factor 1 Mindset self-Efficacy challenges $\alpha = .863$	Factor 2 Social support friends $\alpha = .776$	Factor 3 Parental expectations $\alpha = .785$	Factor 4 Faith $\alpha = .883$	Factor 5 Social support instructors $\alpha = .820$	Factor 6 Personal control $\alpha = .779$
Q38	Q11	Q19	Q29	Q22	Q40
Q24	Q12	Q17	Q30	Q21	Q10
Q34	Q14	Q27	Q28	Q23	
Q25	Q13	Q18			
Q8	Q37	Q20			
Q39					
Q2					
Q36					
Q7					
Q35					

Table 9 represents the Cronbach's Alpha scores for each individual factor on the final version of the RSCS. According to Gliem & Gliem (2003) factors one, four, and five are good and factors two, three, and six are acceptable. Factor six only had two items to load but the other five factors have three or more item loadings.

Table 10 represents the list of items on the final version of the RSCS. In the list you can identify which item corresponds with what specific factor. The factors were named based upon how the items loaded. Based upon table ten the loadings and corresponding factor names easily make sense.

Table 10  
*Resilience Scale for College Students (RSCS) Questions and Factors-Final*

Question	Factor
2. When I fail I know I can bounce back.	One
7. I have what it takes to be successful.	One
8. When obstacles arise I can think of solutions to overcome them.	One
10. I am in control of my future.	Six
11. When I have problems I talk to my friends.	Two
12. Talking to my friends helps when I am stressed.	Two
13. Talking to my family helps when I am stressed.	Two
14. If I have a problem I cannot solve I have someone to ask for help.	Two
17. Making my parents proud is important to me.	Three
18. My parents made sacrifices so I could pursue my dreams.	Three
19. I am where I am because my parents invested in me.	Three
20. Encouragement from others motivates me.	Three
21. Building relationships with my instructors is important to me.	Five
22. Making sure my instructors know my name is important to me.	Five
23. Making a good impression with my instructors is important.	Five
24. Setbacks will happen, but I know I can overcome them.	One
25. When things get tough I try harder.	One
27. Knowing my parents believe in me keeps me going.	Three
28. Believing in something larger than myself motivates me.	Four
29. My faith helps me when I am stressed.	Four
30. When things go wrong my faith helps me stay motivated.	Four
34. I can think through my problems to identify solutions.	One
35. The harder I try the closer I get to achieving my goals.	One
36. When I experience setbacks I adjust my strategies.	One
37. When things get tough knowing that others believe in me is important.	Two
38. When I experience a setback I still believe in my ability to succeed.	One
39. I face challenges head on.	One
40. I am in charge of my future.	Six

## Chapter 5: Discussion

Pursuing higher education is often fraught with intense demands and expectations that students struggle to manage. In particular, juggling increased academic pressure, a new environment with new responsibilities, all while trying to initiate and sustain new interpersonal relationships. More, college life is frequently characterized by unexpected life changes such as losing a parent, changes in financial circumstances, or illness. Further, many must balance employment and their studies for the first time without the comforts of home. In some cases, those that attend large universities uniquely feel overwhelmed by rising costs, feelings of social isolation and a perceived lack of academic support from faculty and staff. Going to college is a wonderful opportunity for growth, an exploration of self, and access to a whole new world for most. However, the sad truth is that many do not realize their dream of earning a college degree.

What is the difference between those that are able to meet the demands of college life, sustain effort towards academic goals, and adjust to a new environment in spite of substantial stress and earn a degree and those who buckle under the pressure? What factors influence persistence towards academic goals despite challenges, setbacks, or barriers? Furthermore, what can we do as educators, clinicians, policy makers, researchers, and administrators to facilitate positive outcomes for undergraduate college students? High school seniors who are said to have great promise academically are transitioning to college, in some cases, with little understanding of what to expect. As a result these students are encountering varying levels of academic stress, significant challenges, and setbacks with very little preparation or tools to successfully meet their academic goals. There are limited studies in the literature to assist IHE's in meeting the needs of these students both administratively, clinical, and educationally. The purpose of this study was to

address this need by adding to the body of literature in the area of resilience, academic processes, and academic success by developing an instrument that could be used in future research, program development, clinically, and academically.

### **Implications**

Academic persistence is a complex interaction between an individual student's motivation, sense of belonging, and his or her ability to tap into internal and external resources to push past adversity. This study advances the definition of undergraduate resilience as a multi-faceted, complex relationship between a student's mindset, self-efficacy, faith, connection to a strong support system, having overcome challenges successfully in the past, a sense that he or she is ultimately in control of future outcomes and the support of a parent or caregiver.

**Implications for practice in IHEs.** Resilience has been studied widely across disciplines but minimally as it relates to undergraduates and academic processes. Colleges and universities are being encouraged to include psychological factors in their exploration of strategies to increase retention rates and the likelihood of a student persisting through academic stress to earn a degree. At the time of this study there was no widely accepted scale to measure resilience specifically in undergraduates. Huang & Lin (2013) recognized the need to develop a scale focusing on assessing resilience in undergraduate college students but specifically for the Taiwanese population. Conner & Davidson (2003) provide an option that has been utilized more in the literature. However, the target population for their scale was clinical. The purpose for developing the scale was rooted in the treatment of a clinical population specifically anxiety and depression. While the authors presented valuable work the current study provides an option that might be more generalizable. The purpose of this study was to address this need by developing a scale to assess resilience specifically for undergraduate college students that could be used in

future resilience studies. The RSCS is developed specifically for undergraduate college students matriculating at an institution of learning, there is no specific criteria for race, ethnicity, cultural background, or mental health parameters. By design the RSCS is meant to be an instrument with wider applicability.

The development of the RSCS was critical to begin being able to use data to better support college students as intervention points can be better identified with the use of data. Studies support the assertion that an individual can be taught to believe intelligence is malleable, that increased effort is the key to positive outcomes, and failures are an opportunity for growth (Aronson et. al., 2002; Hong et. al., 1999; Morales, 2014;) More, the motivational model of achievement that drives this study supports the claim that the beliefs a student holds about intelligence and his or her abilities can be modified through intervention. Furthermore, studies support positive academic outcomes when students participate in faculty and peer mentoring programs versus those that do not. These are key components of the resilience framework that can be translated into key components of a curriculum.

One implication for the use of the RSCS in IHEs is that it can be used to identify students with low resilience scores, that are struggling academically, then required to participate in courses designed to improve resiliency and given the RSCS again to track progress. For example, a student's mindset or core beliefs could be assessed using the RSCS during freshman orientation, those students who are exhibiting implicit theories that foster vulnerability can be advised by their academic advisors to enroll in courses specifically designed to feature topics associated with higher levels of resilience i.e. mindset, self-efficacy, goal setting, interpersonal skills training, time management, organizational skills, etc., these students can be assessed using the RSCS at intervals during the semester by the instructors of these courses and this data can be

provided to advisors to assist with course selection, and during end of the year advising appointments the outcomes from the RSCS can be discussed in conjunction with end of the year grades. In contrast, those students who are assessed during freshman orientation who demonstrate higher levels of resilience can be encouraged to participate in a mentoring program designed to pair students perhaps based upon major. So, the students who are demonstrating lower levels of resilience would be in essence be receiving support from their instructors, their peers, and their advisors which supports the findings in the literature regarding the relationship between social support and resiliency. More than that, IHE's would be addressing the psychological factors of students as recommended by the literature. The approach outline in this example takes a proactive versus reactive approach to improving academic outcomes i.e. successful course completion, course attendance, improved faculty student interactions, etc.

A second practical implication for the development of the RSCS is that if the IHE focuses on the importance of resilience in college students by administering the RSCS, it may also better prevent student failure by incorporating the adapted definition of resilience in which resilience is a complex, dynamic construct into strategies and approaches for teaching. Specifically, instructors and advisors can adapt the way they create and deliver lesson plans, assessments, and even how subjects are taught. Specifically, recognizing that undergraduates demonstrate more resiliency when they create learning goals and embrace challenges within the classroom, educators can provide more opportunities for feedback, rewrites for written assignments, group work, and less traditional assessment tools i.e. multiple choice exams.

Third, the key components of the resilience framework can be used to design an intervention program that is utilized in high school transition programs thereby preparing students to successfully navigate the emotional, physical, academic, and social changes of



college life. Current research supporting the relationship between a growth mindset and positive academic outcomes in high school students provides the foundation for future studies using the resilience framework (Blackwell et. al., 2007; Yeager & Dweck, 2012).

A fourth practical implication for the RSCS is that the resilience framework can be used to design an intervention program that can be used in future research studies on undergraduates, motivation, academic persistence, and academic success. Facilitating first year success with programming designed to address the identified stressors in the literature is essential. Another valuable aspect of the RSCS is the ability to identify undergraduates with high resilience scores. These students would become ideal candidates for a peer mentoring program for those students with lower resilience scores. In summary, the application of the RSCS isn't solely for those undergraduates with deficits but also for those who are exhibiting strengths that can facilitate the successful matriculation of their peers. Though there are promising outcomes from this study it is not without limitations. We will discuss these next.

### **Implications for Future Research**

The initial development of the RSCS leads to numerous directions and implications for future research. First, the participants in the sample held B+ averages or higher with most of the sample (84.9%) falling into the high resilience group. It begs the question: What is the relationship between individual levels of resilience and academic success among undergraduate college students using grade point average as an indicator? Future research should test the scale across students with more variation in academic grades and attendance to determine how the current scale performs with variability across these factors important to resilience.

Second, this study did not examine gender differences in undergraduate resiliency. There are inconsistent findings in the literature for gender differences and overall levels of resilience as

well as how resilience might influence academic outcomes (Huang & Lin, 2013). Gender related differences in resiliency and subsequent end of the year academic outcomes were noted by Allan et. al., (2014). However, the authors did not find any significant differences in gender for total scores. More, males did not predict academic outcomes. The complexities of gender related differences in experience of resilience and overall resilience levels require more focused studies. This study included predominantly female participants who agreed to participate. Future research could force only male participation, or expand recruitment procedures to include more male respondents.

Third, this study did not examine how a student's classification or whether or not he is the first in his family to attend college might influence resilience. The research is unclear still on how first generation status affects resilience and college completion but future research validating the RSCS should intentionally recruit students who identify as first generation college students to compare those students with similar peers who do not identify as first generation college students. The few studies that have examined first generation status have found those who are first generation tend to struggle more , face cultural, social, and academic challenges based upon race (Pascarella, et. al., 2004; Steele, 1997). There are not enough resilience studies focusing on how these demographics might influence resiliency and academic outcomes.

Fourth, this study only included 55 freshman students. Future research should recruit a sample that includes those students who are just arriving to campus and a larger portion of students in their freshman year. Given the importance of persisting at the start of college, and continuing through each year, it may be necessary to study resilience and RSCS responses across the four to six years of the undergraduate study years.

Fifth, this study did not examine the relationship between racial background and ethnicity and individual levels of resilience. There are very few studies within the literature that have examined how an individual's race might influence resiliency nor are there many studies in the literature that explore how racial background might influence how resilience is conceptualized. The study conducted by Huang and Lin (2013) provide one valuable example. The authors expressed a need to develop a scale that was specific to Taiwanese students. The definition used in the study is said to be specific to that target population. It would be interesting to see how this scale performs with students of varying racial and ethnic backgrounds. More, it would be intriguing to see how the RSCS would perform with this target population in comparison to the scale developed by the authors. Future studies using the RSCS should utilize procedures to recruit samples that are racially and ethnically rich to explore how levels of resilience and academic success might be influenced by race.

In total, these participant-level variables lead to the question: What is the relationship between individual levels of resilience in undergraduate college students and gender, classification, race, age, and status as a first generation student? Examining these questions in future studies could provide clarity that might positively impact programming at colleges and universities, clinical practice, and even high school transition programs. It would definitely advance the body of literature in a way that could only be beneficial.

### **Implications for the Definition of Resilience in Higher Education**

Resilience research has made a significant impact across various disciplines. The body of work is lengthy and impactful for how we approach almost every aspect of the human condition. However, a flaw noted within the literature is the many different ways resilience has been defined. There are definitions like the one utilized in this study that include some variation of

definitions advanced by pioneers in the field while trying to enhance the definition with contemporary conceptualizations of resilience. The definition advanced in this study sought to expand the understanding of resilience yet narrow at the same time. To explain, the definition that was developed as a product of this study provides clarity as it relates to a specific, target population, but also impacts how resilience is imagined in general. Specifically, encouraging the view of resilience as a process and an outcome, as something that is dynamic, developmental, cannot be generalized from domain to domain, as a potential capability of every human being, in essence a complex interworking of strengths you have developed or are developing and resources you must access with every exposure to adversity; realizing that in some cases you will experience positive outcomes that will promote future resilience but in other cases you might not. In those cases it does not mean that one no longer a resilient person. It simply means one did not demonstrate resilience in that instance. This study pushed the understanding of resilience to a valuable construct in so many ways but also limiting in other ways.

Another implication of this work that impacts the definition of resilience is that many of the studies in the literature have been conducted with fragmented, incomplete conceptualizations of resilience, lacking thorough research questions, yielding outcomes that are difficult to put in context. Also, if we do not know how to define it properly how can we expect to study it? It is possible that related constructs such as heartiness and grit are used interchangeably with resilience. This study and the RSCS forwards an understanding that resilience is different from and more expansive than related constructs.

The RSCS would be a useful tool in deepening the understanding of resilience after future studies focusing on the use of confirmatory factor analysis. For instance, a closer examination at the items that (a) loaded together, (b) remained, and (c) were deleted is

warranted. It is imperative to further validate the model retained in the current study. The results in this study, though promising are not substantial enough to qualify the RSCS as complete.

Additionally, future studies with the RSCS are required to establish construct validity. Specifically, convergent and concurrent validity studies must be conducted. Procedures should also be completed to send the final items back to expert panels for review to ensure that the final items still related to resilience as outside experts perceive or define it.

### **Limitations**

With the preliminary nature of the current project, there were several important limitations. First, the sample for this study was one of convenience and lacking in diversity. Using a convenience sample might also increase the likelihood of sampling error. The students recruited for this study were primarily from courses within the college of education and the college of arts and sciences. The sample was primarily female, Caucasian, sophomore and junior students, with grade point averages 3.34 or higher and not first generation college students. Moreover, the sample was good by most guidelines but increasing the sample size to 500 or more students might improve results.

The 6<sup>th</sup> factor, Personal Control, only had two items to load, though high (.625 and .896) having more than two items would improve the strength of this factor. Future research should revisit this factor to determine if other similar items could be added in order to improve the factor strength.

Third, the study theorized a 7-factor model and one of the factors combined with another. This might be because the questions designed to assess the degree to which students have successfully overcome challenges in the past are too similar to those measuring mindset/self-

efficacy. A careful examination of each item to determine that items are dissimilar enough is warranted.

Finally, the current RSCS does not include reverse scored items. Rewording some items for reverse coding on the RSCS which might decrease the likelihood of students skimming questions and providing responses almost reflexively. These limitations create room to grow for research in the area of resilience with undergraduate college students and the RSCS specifically.

### **Conclusion**

The Resilience Scale for College Students (RSCS) was piloted with a sample of 187 undergraduates, including a focus group, and peer evaluation. The focus group provided a substantial amount of content validity for the RSCS. The students participating in the focus group candidly and openly about their impressions of academic stress, what helps them when stressed, the myths of the college experience, how they define resilience, and how their individual backgrounds might influence how they face adversity. The richness of the responses from the focus group was one of the methods used to design the items for the RSCS. The peer evaluators were immensely helpful in providing the perspective from an educator's perspective and a clinical perspective. The peer evaluators provide clarity on ease of use, readability, and whether the scale could realistically be used in the way it is meant to be used. As a result of the peer evaluation and the focus group the RSCS was updated and given to a sample of 338 undergraduate college students. The data was subjected to rigorous analysis with promising outcomes.

The final scale has 28 forced response, Likert style items and 6 demographic items: age, race, classification, first generation status, gpa, and gender. The literature review was used to in conjunction with the focus group and peer evaluator results to write the items for the RSCS. The

final RSCS is based upon a 6 factor model: mindset/self-efficacy/overcoming previous challenges, social support-friends, parental support/expectations, faith, social support-instructors, and personal control. The factor structure of the RSCS supports the current resilience studies that have found these factors to contribute to resilience in undergraduate students. The RSCS has good internal consistency with a Cronbach's Alpha of .894. The 6 individual factors have Cronbach's Alpha's that range from .776 to .883. The factors make sense based upon the item loadings, items that are similar in nature loaded with other similar items supporting face validity. Peer evaluation and the focus group with undergraduate college students further supports content validity and face validity. Each item on the RSCS represents an empirically supported characteristic of resilience in undergraduate college students supporting content validity.

The RSCS has 28 items using a 4 point Likert scale yielding a total score between 28 and 112 making it easy to administer and score. Also, the resulting total score can be evaluated further as either low, medium, or high resilience simply. Low resilience scores are those 56 points and below, medium resilience scores are those between 57 and 84, and high resilience scores are those scoring 85 points or more. Also, responses to individual items can be assessed to determine areas of need or strengths that can be maximized to facilitate positive outcomes. The ease of use and straightforward nature of the RSCS makes it a valuable instrument for clinical practice, educators, administrators, policy makers, researchers, and even personal use.

This study advanced a definition of undergraduate resilience based upon empirically supported characteristics, used this definition to create a scale, established preliminary reliability and validity, and added to the limited body of work on undergraduate resilience and academic processes. This study offered numerous applications and future directions for the RSCS as well

as resilience studies in general. In summary, this study provides a solid foundation with which to build on in the research of undergraduate resilience and academic outcomes.



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June 19, 2019

Takesha Shannon  
ESPRMC  
College of Education  
The University of Alabama  
Box 870231

Re: IRB # EX-16-CM-045-R3 "Development of the Resilience Scale for College Students - RSCS"

Dear Ms. Shannon:

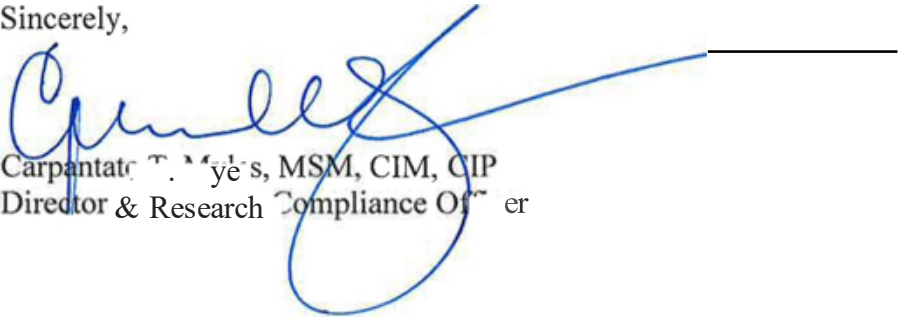
The University of Alabama Institutional Review Board has granted approval for your renewal application. Your renewal application has been given exempt approval according to 45 CFR part 46.101(b)(2) as outlined below:

*(2) Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior, unless:*  
*(i) information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects, and (ii) any disclosure of the human subjects' responses outside the research could reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, or reputation.*

The approval for your application will lapse on June 18, 2020. If your research will continue beyond this date, please submit the annual report to the IRB as required by University policy before the lapse. Please note, any modifications made in research design, methodology, or procedures must be submitted to and approved by the IRB before implementation. Please submit a final report form when the study is complete.

Good luck with your research.

Sincerely,



Carpantier, T. S. S. S., MSM, CIM, CIP  
Director & Research Compliance Officer